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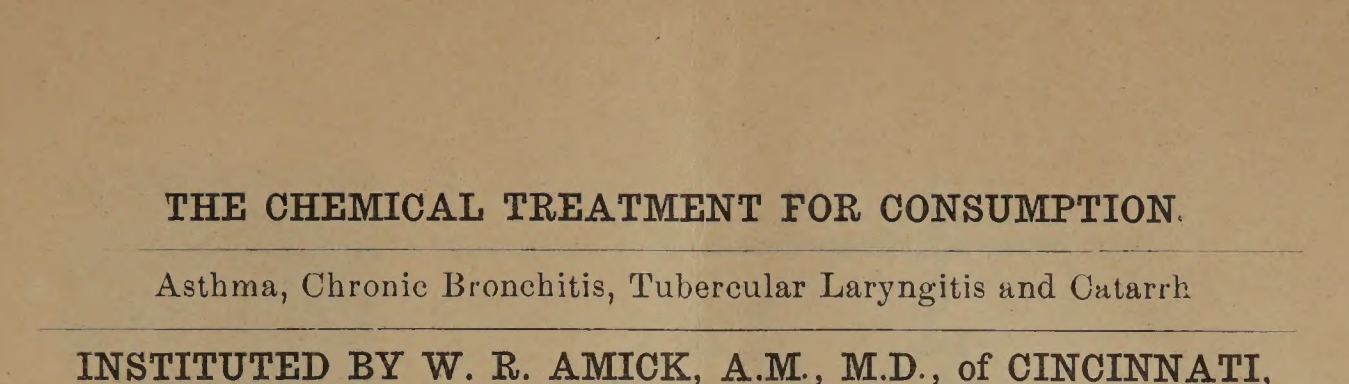

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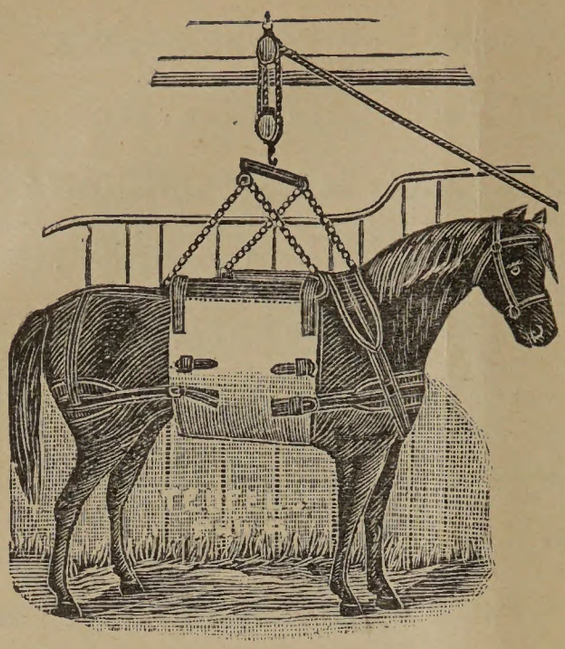

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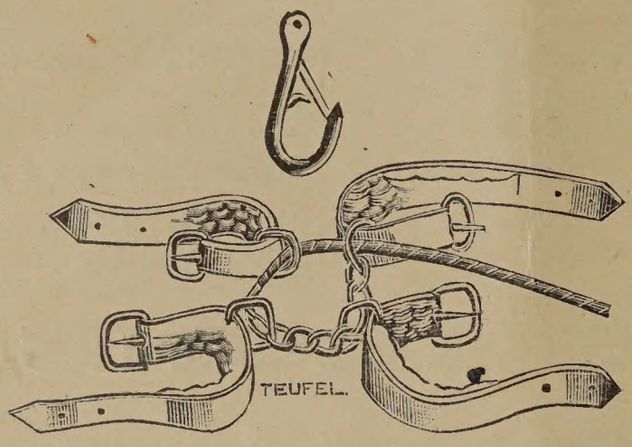

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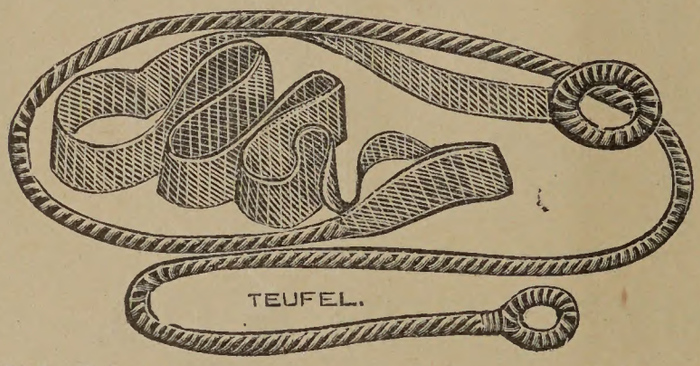

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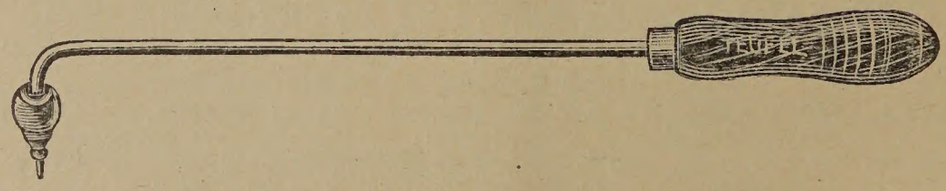

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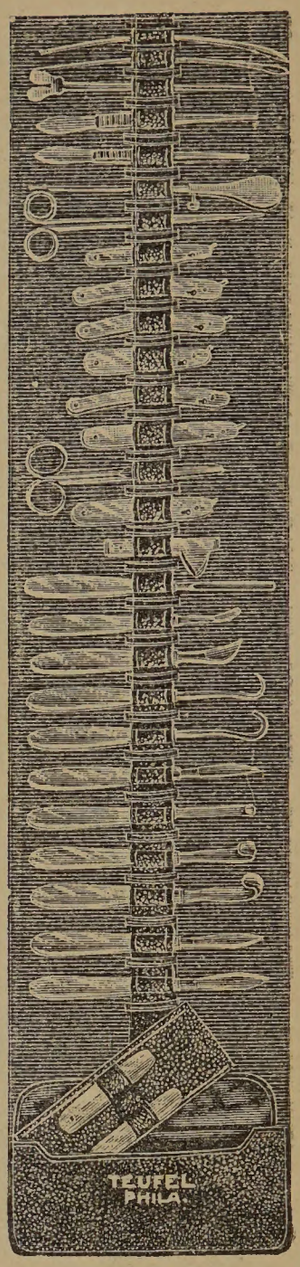

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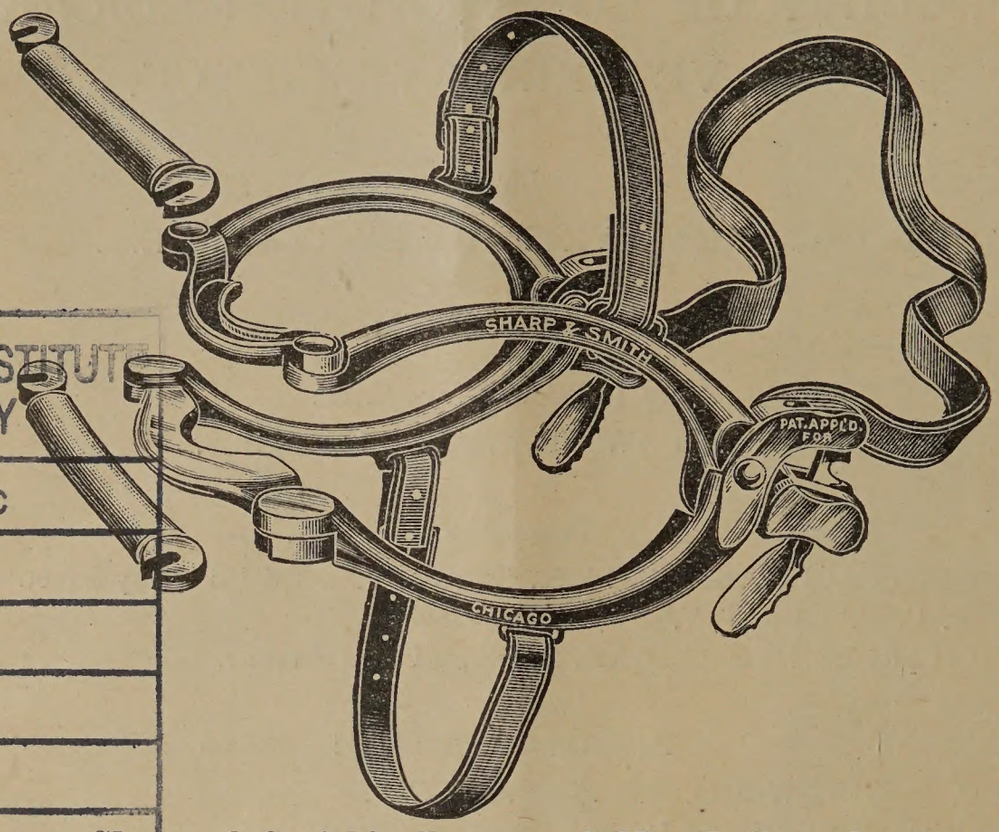

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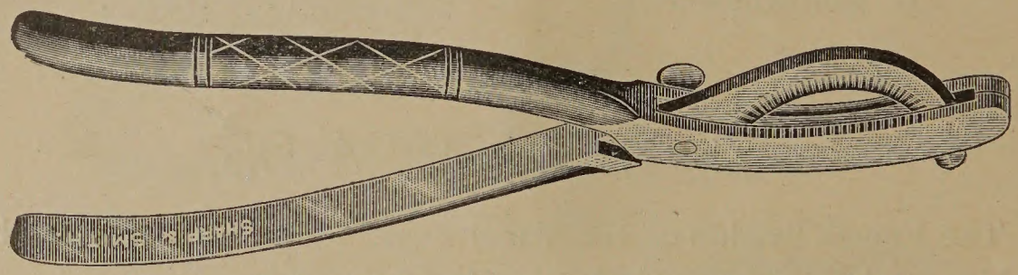

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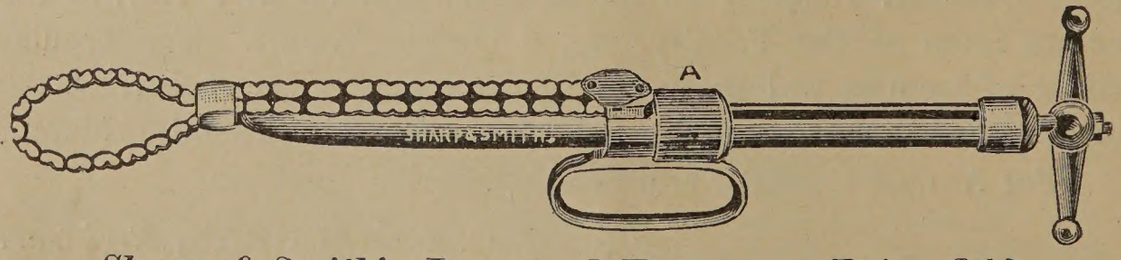

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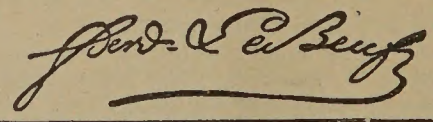

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VETERINARY EDUCATION IN RELATION TO THE PRACTICE OF VETERINARY MEDICINE IN NEW YORK STATE.[1]

BY PROFESSOR A. LIAUTARD, M.D., V.M.

MR. PRESIDENT AND GENTLEMEN: To be called at this moment before such an honorable gathering of members of the veterinary profession is an honor which to me comes to crown a period of thirty years engaged in behalf of the profession; and when I am asked to address you on the subject of veterinary education in relation to the regulation of the practice of veterinary medicine, you can appreciate how I realize the compliment and yet how regretful I must be of what I consider my inability to do justice to the subject. I hope, therefore, that while you will accept my warm thanks for the honor devolved upon me you will also receive my remarks with indulgence and with the assurance that if I err in my conclusions it will be with the firm belief that I am still speaking for what I consider a good cause.

The subject of "Legislative Regulation of the Practice of Veterinary Medicine in the State of New York" is one of the natural consequences of the well-deserved reputation and past history of the State, namely, that of being the *one* in the Union where higher education is the principal aim of her citizens. The *first*

[1] A paper presented to the New York State Veterinary Medical Society, September, 1894.

in almost everything, New York State has been the leader in witnessing the establishment of veterinary schools on comparatively solid foundations, even if these are the results of private undertakings; she was the *first* where, for higher standing of her veterinarians, her veterinary schools were seen to require a matriculation examination, and she was among the *first* in the endeavors which were made to obtain legislative action to regulate the practice of that branch of medicine. The first act in that direction was passed by the Legislature in Albany in 1884.

But these were only the first steps in the right direction. The profession has made great strides toward improvement since the day when the first veterinary school had opened her course in New York City in 1864; a daring step had been taken by the American Veterinary College when, in 1875, candidates to her degrees were requested to pass an examination before they could matriculate and enter her lecture-room, and though this examination continued to be made more severe and more difficult, little by little, they were and are yet inadequate to the requirements and to the qualifications of the educated veterinarian.

In former days, as many of you may remember, and up to the last year, the requirements of our veterinary colleges (I speak of those in this State) were an attendance of two courses of lectures. First, there were only short sessions of a winter course of four to four and one-half months; then a spring session was added, making the course six months; then came the two years' course of six months each; and now we find in the American Veterinary College a requirement of attendance at three winter sessions of six months each, which will be increased to eight months in a short while.

This result has been reached by degrees, as you see; and if we have arrived at this point, if among the successful veterinarians of this Excelsior State we can count many of the alumni of the schools of New York, if we can boast of the progress made by our profession, of the standing to which the veterinarian has reached, there is no doubt that it is due to the fact that our colleagues are possessed of higher education and are ambitious to increase their professional knowledge, reared in that direction as they were while at college, where they were admitted with more or less difficulty, and already in possession of a self-desire for more knowledge and a comprehension that *knowledge* and *education* are *inseparable*.

Does all this, however, mean that though we have so far advanced we have reached the limit of our needs? Our veterinarians are far better educated than they were some years ago; but does it mean that still higher education is unnecessary or would be superfluous?

Evidently no; and I am quite certain that the days are not far off when, in the United States, the standard of veterinary education will be that which has for years existed on the Continent and lately established in England, viz.: an obligatory attendance at college of four sessions of at least eight months each.

Of course, this will have to be reached by slow progress; but with it another condition will have imposed itself, viz.: *higher education before matriculation.*

Like in my studentship time, an ordinary good, though special, education was only required, and to-day a degree of bachelor of science or of arts is demanded by the French schools. The same will be demanded here—this, in fact, already exists. Several of the American Veterinary College Alumni had received the A.B. or B.S. before the D.V.S. was added to their names.

But how long has it taken for European schools to reach that point?

If Lyon and Alfort are a century old, and if it is only at the end of those hundred years that such facts have been accomplished, can it be expected that after an existence of only thirty years we can accomplish it?

The progress that has so far been made, as results of *required improved education*, are too evident for me to dwell upon.

The class of practitioners, of the young men who enter the profession, now are far superior to those of years gone by. The work that has been accomplished by the members of the veterinary profession has spoken by its results; greater public consideration is now granted to the veterinarians of to-day as compared with that given to the old self-made practitioner; legislative bodies are listening to our claims. The Regents of the University of the State are devoting some of their valuable attention to the subject of veterinary education and to the "Regulation of the Practice of Veterinary Medicine in the State of New York." From all this we realize that we are coming close to the period I was alluding to a moment ago.

As you are aware, a bill was presented at the last Legislature in relation to those important subjects.

Framed upon the medical bill now in force in the State, the bill recommended the creation of a board of veterinary examiners; specifications were presented as to the duties of that board, as to the qualifications of those who would be allowed to present themselves for examination before said board, and also as to the primary requirement—the essentials for matriculation and graduation from our veterinary colleges.

The principal object of the bill was higher education, and one that no one can object to it, myself least of all; but as long as we are now speaking on this subject, I hope you will allow me a few remarks on some of the requirements of the bill.

The creation of a board of examiners is one that I cannot strongly indorse. I have on previous occasions, and in various papers, pointed out the importance I attach to the existence of such board, and if I erred in calling for a national board, overlooking as I did the difficulties that exist in the creation of such a body through the fact of State rights, I am perfectly satisfied to see the plan started to-day in each individual State until the moment has come when the importance of the veterinary profession will have been proved so powerful as the guardian of our national agricultural wealth, the Federal Government will then take hold of it in the proper way and make it one of its national institutions, as it is in the Old World.

The conditions of admission to examination before the State Board form the most interesting part, however, of the bill to the future veterinarian and to the existing places of education.

Section 176 of the bill reads:

> The Regents shall admit to examination any candidate who . . . is more than twenty-one years of age, of good moral *character, has the general education required in all cases after July 1, 1896, preliminary to receiving a degree in veterinary medicine, not less than three full years*, and has received a degree as veterinarian from *some registered* veterinary school.

These requirements are all that we have been asking for; in fact, all that which imposes itself upon the veterinarians and upon veterinary schools of repute, that which must necessarily be carried out all through the country in a short time.

It means for us the complete indorsement of our remarks and of our propositions made in Chicago before the members of the First Veterinary Congress of America, held last year. It means all obligations for every one who shall intend to practise in *this State* to obtain certificate of qualification and of registration; it means no more imposition on the part of the easily obtained

graduation, from any school, from any part of the world; it means death to quackery; it means the elevation of the veterinary profession on its proper pedestal.

And yet with all these great benefits obtained, with all these obligations which are going to make the veterinary profession of New York State what we are all wishing for, why do we have some objections to make?

The reason is simple, and, though it may appear personal on my part, I will not hesitate to mention it, feeling as I do that no one here will accuse me of personal feeling when the subject of veterinary elevation is at stake.

Gentlemen, years ago, when I began the hard work of starting the first veterinary school open in New York, I admitted to matriculation gentlemen who were earnest in their intentions, in their purposes, but whose education—well, I will say nothing of this; some stayed with us, worked hard and succeeded—others, well, they failed or retired to engage in other more suitable business, and so it went until 1875.

I do not mean, however, to carry the impression that all the students at the New York school at that day were inferior in their education. Some of them have made their mark in the profession—some of them are to-day among the foremost of our colleagues.

In 1875 the American Veterinary College opened its doors; the matriculation requirements were carefully considered and imposed in 1877, when *certificates of collegiate or academic education or a preliminary examination are demanded.*

Of what did that preliminary examination consist? It was not very severe, you may believe, but yet it proved a benefit—better students came to us.

In 1885 the requirements at the A. V. C. are made more stringent and better defined. "They demand a *good common school education, certified* by *college degree* or an examination on *reading, writing*, and *spelling*."

In 1889 a still more severe test is demanded, as the examination now will consist in an *essay* as test of *handwriting, orthography, grammar*, and *reading from* a *classical* work.

In 1890 no change is made, but the *better educated the candidate is the better will it be for his further studies.*

In 1894 the requirements are either a certificate or diploma of a college degree, or "certificate of an examination passed before a recognized college, or of having attended the highest

class of a public school," or "an examination which will serve as a test in *reading*," *handwriting*, *orthography*, *grammar*, and *arithmetic*.

Gentlemen, it has taken us twenty years to reach this still low standard. We have progressed slowly, perhaps too slowly, some will say. I will answer, "Yes, but surely."

It is well enough for some of our friends to say that the requirements demanded by the Regents' bill are certainly very low, and that after all the examination on *arithmetic*, *elementary English*, *geography*, *spelling*, *United States history*, *English composition*, and *physics* cannot be considered as too severe a test for a candidate to the study of the immense field of comparative medicine.

I will grant that "the better educated, the better fitted." But are our young men prepared for this sudden raise in the requirements? Many possess those qualifications, no doubt, but how many do not? It may be proper to expect them from our city boys, but how about those who are in the country? It may not be difficult to find them among families well-to-do, but how about the ambitious boy who has by hard work—I was almost going to say hard labor—learned some of the requirements that you ask, has economized to see his way through the three years of college life . . . and who finds the college doors closed for the present, at least for several years anyhow, until he becomes possessed of your new reinforced obligations?

But let us suppose that we are in error, that the officers of the American Veterinary College have been wrong in working so carefully since their organization, and that the requirements of the bill of the Regents should be the only one which would allow our veterinary schools to grant degrees to veterinarians who would establish themselves afterward in the State. What would it mean? What would be the result?

Simply this: *Private schools, give up your charter and close your doors. Your existence of thirty years' teaching, gentlemen* of the *faculty, are no protection.* Your ungrateful work, your years of persistent activity, your sacrifices in behalf and for the love of your profession, must all be ignored. *Your schools will remain empty*—not because of your deficiency, perhaps, but of the severe requirements for which our young men had no opportunity and no time to prepare, and which have *chased them in the veterinary* halls of other States.

Do not believe, gentlemen, that I exaggerate. I have seen

enough of this done in the past, and if it proves to be so when the requirements were so slowly, so gradually increased, what will it be when the new régime is re-enforced?

You may say that if the students from the State will go to graduate in other States they will have at their return to submit to the requirements of the Regents' bill before they can practise.

This is true. But how do you know that they will return? And what will be said of New York, the "Excelsior" State, whose veterinarians would then become alumni from other schools and graduates out of the State?

The alumni association of the American Veterinary College counts 200 gentlemen out of her 530 graduates, 200 who are from New York State and New York City, most of whom are practising in the State.

How many more hundred are likely to follow their example, and yet the life of our private schools, of those who were the nursery of the *American veterinary profession*, with their existence of hard and persistent devotion to her, a proud life, as it is in fact, is threatened, and her existence may be suddenly ended by a stroke of the pen of our Governor.

Gentlemen, no one in this building knows what the foundation and elevation of a place of instruction, and specially of a veterinary school, exacts, of work, of restless nights, of patience, of sacrifices of all kinds. Some imagine that it is all smooth road; that all there is needed is to organize, issue circulars, open, go on . . . or close. But if anyone entertains those ideas, let him be sure it will take but a very short time to satisfy him of his error.

Our schools as they have been since 1864 are private undertakings; their life, their improving curriculum, their success, their existence, have depended on the number of students which have come to them; they have not behind them the support of wealthy and well-known organizations—for these last, 100 students or no student may mean alike—for the private schools, no student or a limited number mean an arrest in their work, a lack of life support, the closing of their doors.

And then what? Is our State prepared to receive the future students (from 75 to 100 last year) who wait for admission to the schools? Is there another veterinary institution which is ready to admit them, with the same facilities, same opportunities for theoretical or practical work?

If there is, then the Regents are right. A school (I mean

State school) with everything that is necessary, with perfect organization, is what is wanted in our large States. When once such State institutions exist, private undertakings will scarcely have a right to existence; but until then do not cripple the efforts of the schools of the day, which, after all, have done so well and against which you cannot even reproach their slow growth as long as you have not granted an *iota* to their help.

But here, Mr. President and gentlemen, I have occupied your attention quite long enough. I have endeavored to show you how a higher degree of education is necessary for our future candidates to a veterinary degree; how with this desire in view the A. V. C. has little by little reached the point where she is to-day; I have tried to show you what might, what will be the result of too sudden and severe requirements upon the existence of our private schools in the State, and which in case of death cannot be replaced *immediately;* and it is in the behalf and for the welfare of these mothers of the American veterinary profession that I will close these remarks in recommending to the favorable consideration of the meeting the following conclusions, namely: that we indorse the passage of a bill recommending the establishment of a State examining veterinary board, in *which* the requirements for matriculation to any of our State veterinary schools, besides those including degrees of an academy, high school, etc., shall be a certificate from the Board of Regents of the University, based upon a graded scale in such a way that for the *year* 1895–96 the examination shall be on *English composition* (that is, spelling, writing, reading), *arithmetic and United States geography;* for the year 1896–97, *English composition*, *arithmetic*, *geography*, and *United States history;* for the year 1897–98 *English composition*, *arithmetic*, *geography*, *United States*, *history* and *elementary physics*, and in which the condition of admission to examination of a graduate before said board shall be a degree from a veterinary school or veterinary department of a university having at least a *three-years' course* of studies and *college attendance*.

The Department of Meat Inspection of the city of Philadelphia has just made its report, in which we note that 209 cattle were condemned, 109 for tuberculosis, two for actinomycosis, and the rest for other causes. One hundred and thirty-one sheep were also condemned.

PURPURA HEMORRHAGICA: ALSO CALLED ERUPTIC FEVER, PETECHIAL FEVER, ANASARCA, ETC.[1]

BY J. W. SALLADE, V. S.

THIS is a disease of a non-contagious, febrile character, of an intermittent nature. It is not a specific fever, but rather a secondary fever produced by dead material from suppurating surfaces and the oxidation and absorption of the colloid mass (a substance resembling glue or jelly) contained in the tissues, giving rise to a serious disease of the vasomotor system which governs the circulation in the smaller bloodvessels and capillaries. The capillaries of the skin and mucous membranes are especially implicated; they become congested with blood, which exudes through their walls, causing characteristic phenomena.

SYMPTOMS. The disease commences with symptoms which are very variable. In some instances the earliest symptoms may be pain and slight swelling in one or more legs, or a slight swelling in some other part of the body unaccompanied by pain, or again you may have your attention drawn to the fact that the animal is not doing quite so well—that he does not eat so well, that he appears stiff, or else is sluggish and is at a sort of standstill, is not convalescing so rapidly as he might, when, upon examination, you find small purple spots upon the Schneiderian membrane; without any other evidence this condition is proof positive of the existence of this trouble; but the appearance and local lesions are so unlike in gravity and location, and the constitutional phenomena so variable, that the original trouble is often masked. At first the pulse may be normal, and is seldom anything but normal, the temperature very little disturbed, the appetite good; but after two or three days the temperature rises to 102° or 103°, and often reaches 105°. The pulse now labors at 70 or 80 per minute, the appetite is variable, swellings appear in different parts of the body; these occur on the surface of the body, generally on the legs, lips, side of the head, on the forearm or under surface of the body. These swellings are seldom hot, somewhat sensitive, and are distinctly circumscribed from adjacent healthy tissues by a marked line. Thus the swelling in the hind leg ends abruptly above, as if a cord had been tied

[1] Read before the Schuylkill Valley Veterinary Medical Association.

around the leg. The swellings are due, as already stated, to a congested condition of the capillaries and small bloodvessels of the skin, owing to paralysis of the vasomotor system and an extravasation of blood into the areolar tissue, and the transudation of serum and feebly coagulable lymph. The swellings rapidly increase, the animal is rendered stiff by the swelling of the legs, and frequently stands rooted, as it were, to the same spot, disinclined to move; shows pain by lifting one leg and then the other; and the swelling may affect only one leg or it may affect all four at the same time, or any number of them; again, it often leaves one to appear in another, or leaves all to appear in the head, which often swells to an awkward and alarming size, the nose and lips swelling and the swelling extending back to the throat, causing closure of the nostrils, or else pressure on the larynx, which gives rise to difficult breathing, sometimes great dyspnœa, threatening and even causing suffocation. The small purple spots in the Schneiderian membrane gradually assume a brownish and frequently a black color, and coalesce, forming large blotches from which there occur frequent hemorrhages, the blood being very dark in color. The swelling of the head often interferes with the movements of the tongue and jaws, preventing the animal from eating, which increases the already great debility that exists. Œdema of the lungs, causing asphyxia, and colicky pains indicate that the bowels are attacked. I have had cases in which there was swelling or œdema of the throat and dyspnœa without any external swelling.

Causes. In the great majority of cases purpura occurs as a sequel of some debilitating disease, such as influenza, and its origin in most cases is directly traceable to bad ventilation or bad drainage. Overwork during convalescence from such disease, and while the nervous system is yet in a debilitated condition, is also an exciting cause. Exposure to cold and exposure to cold draughts when heated may cause it, but with proper ventilation and drainage these latter conditions more frequently cause pneumonia, pleurisy, etc. In the majority of cases the hygiene of the stable is directly responsible for this disease. Of course, the effete matter contained in the system, the condition of the blood and vasomotor system, or its action on the same, renders the animal prone to its development.

Terminations. Resolution. This is the most favorable as well as the most frequent termination, and may be looked for at the end of the third week, the animal being ready to go

to light work after the first month. It is brought about by absorption of the effusion and profuse diuresis. Even when this takes place there is at times left some permanent induration.

METASTASIS. The dropsical swellings often disappear from one part of the body and reappear in another. This is a dreaded complication. As long as the swellings are confined to the external surfaces of the body, and do not involve the head and neck too much, no great danger may be apprehended; but when it suddenly disappears from the legs and under surfaces of the body, more especially during the first week or ten days, and the animal shows colicky pains or labored breathing, the case becomes apprehensive. Diarrhœa, the fecal matter tinged with blood, a suppressed, deep, hollow cough, a ropy bloody discharge from the nostrils, all indicate that the swelling has changed its position to the inside and that the horse is threatened with death from either asphyxia or enteritis, or perhaps effusion into some serous sac. In pulmonary œdema the parenchyma of the lungs is affected and the horse dies of asphyxia.

SUPPURATION. Suppuration ending frequently in gangrene, especially in small localized spots, which crack and slough, leaving ugly fissures and ulcers to heal. The exudated fluid exerts such a pressure on the tissues that they can no longer resist its force; sweating over the swollen parts of the skin then takes place, vesicles form upon the lower parts of the limbs, around the flexor surfaces of the joints; cracks and fissures appear, from which an unhealthy, fetid, amber-colored discharge issues; the skin sloughs, as do also the subjacent tissues, and the case terminates fatally by exhaustion.

PERITONITIS. Peritonitis may be produced either by the enteric œdema or by perforation of the wall of the viscera by gangrenous spots.

SEPTICÆMIA. Septicæmia is another result or termination of the disease which offers such a favorable field for its development. This is ushered in by severe rigors, sudden rise of temperature, great debility, and coma.

DEATH. Death may be produced by closure of the nostrils or the glottis, asphyxia, hemorrhage, enteritis, exhaustion, etc.

POST-MORTEM APPEARANCES. The post-mortem lesions are very simple. The capillaries are dilated, the connective tissue filled with a cinnamon-colored exudate, and the muscles separated by this jelly-like, colloid mass, which fills and stretches the

meshes of the connective tissue until their web-like structure is expanded like a sponge; dark spots are found on the theca of the muscles, which when cut into are found to be but superficial, seldom extending deep into the substance of the muscles; the pleura, pericardium, endocardium, meninges of the brain and other serous membranes are covered with petechial spots; upon the external surfaces are found abscesses, ulcers, and gangrenous spots; if there was œdema of the lungs, these organs are distended, the bronchi and trachea filled with dark-colored extravasations, the mucous membrane studded with purple spots, etc.

Prognosis. Prognosis depends upon the complications. Although the case looks formidable, with proper accommodations the same may be favorable, yet it is best to be on the safe side, and so for the first week or ten days be a little guarded in our prognosis.

Treatment. The great requisite in the successful treatment of this disease is to provide favorable surroundings. Hygiene plays a most important part; bad air, bad smells, bad drainage and poor ventilation, the chief causes of the trouble, engage our first attention. The mortality is great or small in proportion to the wisdom we exercise in this direction. I have treated a great many cases of purpura, and can safely say have lost but very few of them, although I have had them so weak and debilitated that it was necessary to raise and support them in the slings. My first endeavor is to secure proper ventilation—an open shed preferred, and comfortable clothing, pure water, and proper drainage. The next step is to regulate the disordered circulation and brace up the vasomotor system; to this end I administer twice a day the following: ℞.—Pulv. chlorate of potash, 1 ounce; spts. of turpentine, 1 ounce; spts. camphor, 2 drachms; ol. lini, 6 ounces; mix; this I give night and morning, and a dose of dilute nitric acid, say 1 drachm at noon. I now watch the case closely, observing the action of the medicine on the bowels and kidneys, and renew these doses as often as the condition of affairs will safely permit. The turpentine is given for its stimulant effect upon the heart and circulation, as well as for its warm diuretic properties. The chlorate of potash acts as a liberator of oxygen and an antiseptic. The camphor stimulates the vasomotor system and lessens the action of the pneumogastric, thus increasing the circulation and raising the arterial tension, while the oil acts as a laxative. The nitric acid I prefer to the sulphuric acid generally recommended, for the

reason that it increases the secretions, while sulphuric acid lessens them, and is just as good a tonic. However, where an astringent is required to localize its action at a point remote from the stomach, as perhaps in hemorrhage from the kidneys or bowels, the sulphuric may be substituted. By this treatment absorption is promoted, the excretions increased, the circulation toned up, the vasomotor system stimulated; in fact, the entire system jared and belted up so that the weakened organs renew their functional activity and the products of decomposition are carried off. The acid I generally continue throughout the entire course of treatment. The same with the camphor. In cases where there is a good deal of soreness of the throat I give 1 drachm doses of tinct. of iron and 2 drachm doses of chlorate of potash in solution. I also employ, with the best of results, the bichromate of potash in nearly all of my cases, giving it both internally in minute doses several times a day and use it as a wash over the swollen parts in very weak solution. I find that it has a specially stimulating action on the lymphatic system.

EXTERNALLY. I do not believe in interfering much with the swollen parts more than has already been intimated. If the swelling becomes excessive about the head, bathing with a weak solution of the bichromate, 10 grains to a pint of water, is all that is necessary. Denuded surfaces, sloughs, etc., should be washed and disinfected. Tracheotomy may become necessary where mechanical asphyxia is threatened, but I never yet had a case where I deemed it necessary, although I had them gaping pretty loud for breath in my time. Where there is wheezing and slobbering or frothing at the mouth I find that a sharp blister of red iodide of mercury applied to the throat gives speedy relief. If, however, the dyspnœa is due to closure of the nostrils or closure of the glottis this alone may not avail. However, I am almost egotistic enough to assert that if called in time, and the veterinarian follows the general rules laid down in this humble effort, there will be no such serious complications. Upon the first sign of internal complications, such as pawing, labored breathing, etc., apply a mustard plaster over the entire chest and belly of the animal. The peripheral irritation set up by the sinapism draws the current of the circulation to the exterior, stimulates the nervous system, and prevents metastasis to the lungs and intestines.

HYGIENE. Hygiene, as already indicated, is a most important factor in the treatment of this disease. As regards food and

water, I prefer to keep constantly before the animal a liberal supply of fresh pure water, changing it frequently, and allow any kind of food the animal will take and that the stomach is able to take care of; let it be clean and pure, but do not allow it to accumulate in the manger, for the horse will sicken at the very sight of it. Milk is very good food, and you may find it necessary to administer milk, egg-nog, whiskey, etc., as well as medicine per rectum. Always bear in mind that it is really, after all, food that gives permanent tone and strength to the tissues.

VETERINARY SCIENCE.[1]

BY L. M. KLUTTS, V.S.

After a long and somewhat serious consideration I have come to the conclusion to fill my assigned task by describing the agreeable horrors of veterinary science. Unqualified as I am, I approach this wide subject with fear and trembling. I am doubly convinced of one thing: I could not have selected a broader, better, or more fit subject for penning my ungrammatical thoughts for this occasion.

As this honorable body of true and loyal men gaze into my face, you demand of me something of the early struggles of the good and faithful pioneers, who lived a life of success and finally died in the noble cause.

You request me to make honorable mention of the schools and authors of your fancy, knowing, as I do, that we have representation from almost, if not all, the recognized schools in America, and perhaps a few from Europe, France, and Scotland. And allow me to mention right here, that should any of you not be inclined to like the contents of this paper, do not request me to make an apology. There are a great many important things pertaining to veterinary science that I know nothing about, of which I am not liable to write very much.

The science comprises a knowledge of the conformation and structures of all the domesticated animals, including their physiology and individual characteristics, their humane man-

[1] Read before the Missouri State Veterinary Medical Association at St. Louis, October 12, 1894.

agement and utilization, their protection from, and medical and surgical treatment in the diseases and injuries to which they are exposed; their relation to the human family with regard to communicable disorders. In looking over a few statistics, we Americans have to take a back seat. Perhaps, by hard work and perseverance, we will be able to bring up the rear of this progressive science which we have chosen as a profession among many, by which we might be fortunate and successful enough to earn our daily bread.

There is evidence that the Egyptians practised veterinary medicine and surgery in very remote times, but it is not until we turn to the Greeks that we obtain any very definite information with regard to the state of veterinary medicine in antiquity. Aristotle wrote on physiology and comparative anatomy and on the maladies of animals, while many other Greek writers on veterinary medicine are copied by later investigators. Varo (128 B. C.) may be considered the first Roman writer who deals with animal medicine in a scientific spirit. Celsus is also supposed to have written on animal medicine.

The works written by Colemelia on veterinary medicine and surgery also deserve mention. Other editions of the same author, containing sanitary measures for the suppression of contagious diseases, were considered quite good. From the third century onward, veterinary science had a literature of its own and regular practitioners.

Apsyrtus, of Bithinia, perhaps, was the renowned veterinarian of the Roman empire. His professional life seems to have enjoyed a high and well-deserved reputation in his time. Being a keen observer, he distinguished and described a number of diseases which were badly defined by his predecessors. He recognized the contagious nature of several maladies, and prescribed isolation for their suppression.

Not less eminent was Hereocles, the successor of Apsyrtus, whose writings he largely copied, but with improvements and valuable additions, especially in the hygiene and general care of stock.

Veterinary science was undoubtedly nurtured and cradled back among the shepherds. Abraham made himself famous by his examples of breeding for color of different stripes by casting different shadows in drinking pools and placing dazzling objects of different colors in front of his animals at the period of copulation.

Another strong man's life presents itself, by which we learn an important lesson in regard to the bony structures of the mule. We find Samson bound with cords by the strong authority of Israel. Just think of him lying down at the camp of the Philistines. Without a single friend to pity or an atom of law for protection, he bore persecution in silence until he received help from a higher power, when he was enabled to break the cords of bondage and picked up the jawbone of a mule as a weapon of warfare, and the result was an unexpected funeral of over a thousand Philistines.

This is an object lesson by which we learn that things are continually changing; for instance, the Philistines ever since have been just a little jubus of a mule's head, while we fellows down here on the border of the nineteenth century have almost the same superstitious idea of his heels.

Gentlemen, I shall just invite your indulgence for a short time on sacred history, knowing that a few doses administered at regular intervals are both pleasant and stimulating.

This subject of veterinary science demands of me to gather information from earth, sea, and sky, and I will promise to be brief, knowing that my paper will be disagreeably lengthy. The earth upon which we tread is filled with living objects. A large proportion of the sand of the Libian Desert consists of microscopic fossil remains, and the marine sands of the Paris basin are in some localities so full of microscopic forms that it is calculated that a cubic inch of the mass contains sixty thousand.

In the water that we drink animalcules are sometimes visible to the naked eye as moving points, and with the aid of a microscope we are enabled to estimate that a single drop of water will contain many thousands of them.

When we gaze into the aerial space we behold thousands of insects dazzling in the air, not including the mosquitoes in New Orleans, flies in Philadelphia, and bedbugs in Chicago. On closer examination we find that living germs that cause disease are undoubtedly carried in the air from neighborhood to neighborhood.

In my ramble for information to fill my paper I find Jonah is worthy of note. Did any of you fellows ever read the Book of Jonah? I would ask you to hold up your hands if I was not afraid I would skunk you.

I find this historian down along the seashore awaiting the

departure of a ship, so he could skip for another country, where he thought he could not hear the commands of his master. We will take him up in our minds for a moment and think of the beautiful picture of imagination he had framed in his mind. What I am going to do when I get over yonder. This ship runs so lovely. Good-by, old country, I am going to leave you. This is just delightful. I am content now; I am going to retire, I can sleep now. I don't know but what he said good-night to the sailors. Another moment, and he is fast asleep. Now think of the terrible storm, and the sailors rushing down there and rousing up this man. Here we will have to cast lots to see who is to be thrown overboard. Next, I see my man at the edge of the ship, in the strong arms of the sailors, and into the water goes our subject, to be swallowed by a large sea monster, or whale. I am undecided what you have learned by this illustration, but I tell you I have learned something of the digestive apparatus of this animal, which links information to veterinary science.

Perhaps the most important era in the history of modern veterinary science commenced with the institution of veterinary schools. France was the first to take an important step in this direction. Bourgelat and Bertin influenced the government to establish a veterinary school at Lyons in 1761, and through the influence of this one many more institutions were founded and became self-sustaining.

Soon we found a school in Austria, and in 1790 I find St. Bel laboring in Europe, and finally formed an institution styled the Veterinary College of London, and from time to time additions were built as the pressing demands became urgent. This school made rapid progress in public estimation under the management of St. Bel. Next in rotation we find veterinary missionaries in India, where very good work was done to prevent contagious disorders. In a short time we find Professor Dick in Scotland, and, with his perseverance and ability, stamped a favorable impression on the minds of his hearers, and up go two veterinary schools, one at Edinburgh and the other at Glasgow. Both are reported as doing good work and in a flourishing condition. The Royal College of Veterinary Surgeons has turned out since 1844 over four thousand registered graduates.

In some of the old countries a veterinary surgeon is recognized by a red cross. Not exactly so in this country; the red coloring matter is generally found in the nose.

In 1861 I noticed Dr. Andrew Smith in Toronto, Canada, pleading with the Board of Agriculture, and through his influential demands lectures on this progressive science began, and the institution has proved to be one of the leading schools in the world. They have turned out about two thousand graduates.

Soon we find the University of Pennsylvania coupling on an addition for the purpose of teaching veterinary science, which has proved to be a most successful move. We also find New York taking the fever and building two veterinary institutions. One, known as the American Veterinary College, has got about five hundred graduates out in this great field of practice, and their success proves to us that New York is no bad place to go to seek an education in this great science.

Next in line, Dr. Howard. How shall I call these attentive hearers to Chicago? Come along, boys; let us leave silver and Wall street in New York, and go to the Chicago Veterinary College, a college that I am all wrapped up in; a college that stands as a monument of industry and progress; a college that never allowed its professors to demand help financially; a college that its professors will pluck a fellow if he is not up well on final examination; a college that I shall ever keep fresh in my memory for the good the professors have done and the little some of its graduates have done. Dr. Howard, I shall always remember the 21st of March, 1889, that memorable day down there in Kimball Hall among the sweet music and the happy professors and students we one by one reached out our hands and grasped something entitling us to administer medicine to domesticated animals in cases of emergency. I shall never forget how we swelled up and thought now we were out of bondage.

I shall never forget how much I thought I knew, and how I was cut down when a specimen of insanity asked me a question pertaining to veterinary science that I could not answer. That was a memorable day. I was somewhat reconciled when one of the professors told me that it took a big fool to ask hard questions, and since then I have been as jubus of fools as the Philistines are of mules.

Next in rotation we find the veterinary epidemic all over our land—Detroit, Mich.; Cincinnati, Ohio; St. Paul, Minn.; Washington, D. C.; and, Dr. Wattles, what about Kansas City, Missouri? Yes, our grand old Commonwealth has swung into line, and this State has got an institution that we should all be

proud of, and we are proud of it, and it isn't done growing yet, either. I was there a few weeks ago at the opening, and it was very encouraging indeed. I noticed temperance badges dangling on some of the students, and I noticed young men there that represented some of the leading families of our land, which indicated to me that this comparatively young college has an everlasting foundation underneath. Very nearly, if not all, the agricultural colleges have a veterinary department attached.

In going back to Chicago I find the McKillip Veterinary College, one of the finest equipped institutions of learning in the world. Its doors are now open, it being a three-years' course school. The outlook for success is encouraging, indeed.

I will venture to say that no profession has made greater advancement in the last quarter of a century than veterinary science. Where ignorance, superstition, and carelessness once dominated, science and culture now hold sway. The horse doctor, who once held a lance in one hand and mercury in the other, was supposed to fill the bill under any and all circumstances. The order has changed to a class of scientific veterinarians in every way worthy of the noble profession which they have undertaken. We have State and government laws that have been enforced, and the beneficial results are well worthy of note. Through this law we have a foreign meat market, and a number of diseases are held in check. President Cleveland, the angel of purity, in his message to the Secretary of Agriculture, indorsed this law, and urged that every applicant for office should be able to show a diploma from some recognized veterinary college.

Now, in conclusion, I appeal to you practitioners, with the limited ambition of my professional reputation, to avoid smooth, polished promises and flashy advertising cards and newspaper puffs; see to it that you do not promise more than you are able to fulfil; also avoid the association of quacks and empirics, who will present themselves to you with a long list of names of bankers, merchants, and stockmen. See to it, gentlemen, that you do not get misled, but keep in mind that any good citizen, under certain circumstances, will be only too glad to sign a paper to get the false pretender out of his neighborhood. Now, see to it, brother practitioners, that you are not persuaded by your own conscience that in order to build a famous reputation you will have to have a number of badges dangling from

your coat, vest, and watch chain, emblems of purity, for the different organizations in your section.

I have the fondest regard for these societies, but I am quite sure they have never taught me how to prognose or diagnose any case in veterinary science. Do not try to serve too many masters. If you are a farmer, strive to be the best in your section. If you are a merchant, be the best in your town. If you are a banker, try to be the best, and if you are so unfortunate as to be a doctor, throw your whole weight into that profession and serve it to the best of your knowledge and ability. Always keep in view that a good reputation (not inherited) is the "Alpha" and "Omega" of many principles. Do not use the word "cure" in connection with your name, but give "honor to whom honor is due." So we will be servants of "vis medicatrix naturæ," and should we prove to be obedient and qualified, our success is sure and our reward will be bountiful.

TUBERCULOSIS IN RELATION TO ANIMAL INDUSTRY AND PUBLIC HEALTH.[1]

Its Prevalence and Relative Importance.

BY ANDERSON CROWFORTH, V.S.

Tuberculosis is so extensively prevalent and proves such a veritable scourge throughout the civilized world that no disease is so deserving of close and accurate study or of the enforcement of effective measures for its suppression. Cholera, yellow-fever, and smallpox, which occasionally invade our territory, creating universal terror and dismay, claim but few victims as compared with this ever-present, universally devastating plague. These other plagues are quick, severe, and fatal, it is true, but for this very reason they can be promptly recognized and checked, and even stamped out; whereas, tuberculosis is equivocal and underhanded in its method, slow and uncertain in its progress, and on this account escapes recognition and proves by far the most deadly of any single disease attacking the human family.

[1] Read before the Ontario Veterinary Medical Association, Toronto, December 21, 1894.

The average ratio of deaths from tuberculosis to the total mortality is 14 per cent., or one death in every eight; while under special conditions it rises to one in three, as in the Marquesas Islands, or even one in two, as on some of our Indian reservations. Tuberculosis may be classed with "the pestilence that walketh in the darkness," while the other three diseases named are like "the destructions that wasteth at noonday." But the deaths from tuberculosis being constant and uniform, people accept them as inevitable and fold their idle hands with true Mohammedan fatalism, instead of boldly exposing the hidden death-trap and cutting short its destructive work.

If the 5490 deaths from tuberculosis which occur every year in the city of New York could be brought together in an epidemic lasting but one week, no smallpox, cholera, nor yellow-fever scare would approach the panic which would thus be created: for did all these diseases together create such mortality in that city? Nay, if we take the whole civilized world and compare with the tuberculosis mortality all the accumulated deaths from war, famine, plague, cholera, yellow-fever, and diphtheria and smallpox, we find that the latter are comparatively very insignificant. Yet tuberculosis, like every germ disease, is absolutely preventable, and is allowed to continue its career of death only because of reprehensible ignorance and criminal indifference.

Its prevalence in the lower animals. Few, if any, diseases maintain a sway over a more numerous genera of animals than tuberculosis. Among the domesticated animals, cattle are the most susceptible, but chickens, guinea-pigs, rabbits, swine, and goats become victims almost, if not quite, as easily. Some have thought that dogs, cats, sheep, and horses are exempt, but when inoculated with tuberculous material these all contract the affection readily enough. The fact that they do not contract it in such numbers in the usual way is probably due in part to the greater amount of outdoor life which they enjoy, also to the fact that they have more exercise, which secures for them a better developed and higher conditioned muscular system, and a full stock of constitutional vigor. After making all these allowances, however, it must be granted that these four classes of animals enjoy a native intolerance to this disease to which the first six classes mentioned are comparative strangers.

Among the less domesticated animals which contract tuberculosis may be named caged apes, lions, kangaroos, deer, elk,

gazelle, antelope, birds, and, in addition, the rats, mice, and other vermin of our houses and barns. All must, therefore, be considered as possible bearers and disseminators of the infection, and no such animal (indeed, scarcely any animal) can be left out of account in any systematic attempt to root out the disease. Some, however, are justly held to contribute more than others to the maintenance of the affection, and in this sense, in addition to man himself, we must consider as pre-eminently bearers of this disease cattle, fowls, and pigs.

Accurate statistics are wanting to give the ratio of tuberculous animals in our herds, as we have no systematic professional inspection of live animals and of those killed for human food.

Tuberculosis contagiosus. In the middle ages tuberculosis in animals was recognized as contagious, and laws were made against the use of affected carcasses as human food, which remain in force in Italy and Spain to the present day. In the sixteenth century the disease was confounded with syphilis, and at the end of the eighteenth century with glanders; blunders which, however unintentional, show the strong conviction that the malady was contagious. The propagation by contagion in herd was recorded in Germany by Ruhling (1774) and Krunitz (1767), and more recently by Spinola, Zannger, and others. In France the same is claimed by Fromage, Huzard, Taposse, Dupont, and Cruzel.

It must be allowed, however, that in the first half of the present century the manifest tendency of the disease to run in families, and to develop under special unwholesome conditions of life, served to weaken the belief in contagion, and in central and western Europe such belief had become practically extinct among medical men, when their attention was called to the subject by the successful inoculations of tuberculosis on rabbits and guinea-pigs by Villemin in 1865. The subject was taken up on all sides by incredulous experimenters, and for a time a keen polemic warfare raged; but slowly the stern logic of constantly accumulating and unanswerable facts compelled all candid observers to accept the doctrine of contagion.

The germ bacillus tuberculosis. An even fuller demonstration came in 1882, when Robert Koch, of Berlin, demonstrated the existence of the tubercle bacillus, and showed that the disease could be produced with equal certainty by inoculating with the substance of a tubercle from the lung of an ox or with a pure culture of the germ grown on peptonized gelatin, apart from the living body.

Before publishing the discovery Koch demonstrated the presence of the bacillus in the expectoration of tubercle of over 100 cases of consumption, and had successfully inoculated 472 subjects—guinea-pigs, rabbits, mice, rats, and cats, besides dogs, pigeons, and chickens. The following are some of the characteristics of the germ:

FORM. A delicate rod, rounded ends, 1.5 to 3.5 micromillimetres in length (or about $\frac{1}{2500}$ of an inch). It occurs singly or in pairs, or chains of three or four connected end to end. When cultivated on blood-serum the groups tend to form elongated, rope-like colonies, having a wavy or serpentine outline.

STAINING. It is characteristic of this bacillus that it absorbs coloring matter very slowly, but, once stained, retains its color with great tenacity.

This enables the microscopist to distinguish this amid a mass of other microbes. The opaque particle in the sputum or a section of tubercle is stained by prolonged exposure to a warm alkaline solution of aniline pigment; it is then bleached by a solution of nitric acid (1:3), and washed and slightly stained with a color which will contrast with the first; finally it is washed, mounted, and examined under the microscope. The rod-like bacillus tuberculosis appears stained with the first color, while the other bacteria, if any, are stained with the second.

BIOLOGY, LIFE-HISTORY. The bacillus tuberculosis lives mainly as a parasite in the animal body, but may be cultivated on the ordinary culture media containing 5 per cent. of glycerin, and makes the best growth at 100° to 102° F. A temperature of 158° F. for ten minutes is fatal to it (Yersin).

Unlike many bacilli, this shows no spontaneous movement at any stage of its growth. Its development is slow in any medium, the earliest signs of growth being visible only after ten or fourteen days.

VITALITY. As it has great power of resistance to the entrance of coloring fluids, so this germ can hold its own for a length of time against destructive agencies. It retains its vitality and infecting power for nine to ten months in dried expectoration (Koch, Schill, Fischer, De Thoma).

Tuberculous cow's lung, dried and pulverized, is virulent after forty-three days (Schill, Fischer), or 102 days (Cadeac, Malet). The bacillus is not destroyed by gastric juice (Baumgarten, Fischer, Falk). In sputum it perishes in twenty hours in a 3

per cent. solution of carbolic acid, in a saturated aqueous solution of salicylic acid, or in saturated aniline water; in five minutes by iodoform ether; in ten minutes in sulphuric ether or mercuric chloride 1 : 1000; in three hours in thymol. It dies in a few hours in direct sunlight, and in five to seven days in diffused daylight. In an ordinary room it gradually weakens, but remains virulent for at least two and one-half months.

INDESTRUCTIBILITY OF THE GERM. *Drying and heating.* The substance of a tubercle, like expectoration, may be dried up and reduced to powder without lessening its virulence, provided too much heat has not been employed in the drying.

Although an absolute heat of 158° F. for fifteen minutes is fatal to the germ, yet in virulent masses, as in meat, it is difficult to determine the actual temperature at all points, and tests are, therefore, often misleading. The interior of broiled steak has been found infected after subjecting it to a temperature of 163° to 176° F. Tuberculous matter heated in sealed tubes to 212° F. has been tried, and even then some germs would exceptionally escape. Some claim that no germs survive the boiling temperature for more than half an hour. Others claim that 162° F., which coagulates albumen, sterilized completely if kept up for a sufficient length of time. If in cooking meat the blood oozes out, the temperature has not been high enough to insure the death of the bacillus. There is a risk of tuberculosis in eating rare steak.

In milk, as in meat, heat is effective at 162° F.; the contained albumin is coagulated, the liquid acquires a boiled flavor, a tendency to constipate, and a diminution of its digestibility and nutritious qualities. In sterilizing this liquid, therefore, for infants and invalids it is better to keep the temperature at 158° Fahr. for a longer period, say, half to one hour continuously.

Drying of the tuberculous matter indoors or in the shade, and apart from the above temperature, and its inhalation as fine dust, are the most common causes of tuberculosis. In one store with a tuberculous clerk the dust raised in sweeping out the store infected clerk after clerk, and a similar rising of the virus in dust is a cause of infection in dwelling-houses, stores, barns, barnyards, and railroad cars. It is now allowed that the infecting matter dried on the handkerchief and shaken out in the air is one of the most prolific sources of infection.

So in animals. A manger smeared with the discharge of a

diseased animal retains the virus in an active state and infects the next susceptible animal fed from it. Hence, long before the day of Koch and his discovery of the bacillus, the infection of animal after animal which occupied the same stall in succession had convinced observant owners and veterinarians of the contagion in tubercle.

The bacillus will survive in water and moist earth for an indefinite time at all ordinary temperatures. The germ survives a freezing temperature, and putrefaction is not fatal to it. Heavy salting of meats has been thought to be fatal to the germ in one month. In salting, however, the meat is impregnated unequally in different parts of the same mass, and therefore, as in the case of a temporary heating, this cannot be relied on as a safe measure of disinfection. The comparative indestructibility of the germ under any of these conditions shows that the slow absorption of pigment by the bacillus is significant of an equally tardy penetration by other hurtful agents, and of a corresponding power of resistance to ordinary disinfectants.

ACCESSORY CAUSES OF TUBERCULOSIS. While all must recognize that one essential cause of tuberculosis is the bacillus, yet it is wrong to ignore the fact that many conditions of the animal system and its surroundings contribute to the propagation of the disease or retard its progress.

While none such accessory causes can generate tuberculosis in the absence of the bacillus, yet when that diseased seed is present these conditions often serve to sway the balance toward its advancement and diffusion, or its restriction and suppression. A suitable soil and favorable climate are not less essential for the vigorous growth of the microscopic vegetable microbe than for the Florida moss or the palm. Among the most efficient accessory causes may be named:

1. *Hereditary predisposition.* Consumption runs in families, and it has long been supposed that this was essentially a family —that is, an hereditary—disease. But, as a matter of fact, it is extremely rare to find the offspring tuberculous at birth or before. In many thousands of pregnant tuberculous cows killed in the slaughter-houses of Europe not more than ten tuberculous calves have been found. To the same effect is the fact that in calves under a year old, born of cows 6 per cent. and upward of which prove tuberculous, the ratio of tuberculosis is often below one per thousand. In Saxony, with the ratio of tuberculous cattle 16.5 per cent., that of tuberculous

calves was only two per thousand. At Lyons, out of 400,000 calves slaughtered, only five were found tuberculous, and at Munich, out of 400,000 but two tuberculous. Again, in such calves the tubercle was found in most cases in the bowels and adjacent glands, suggesting infection after birth through the milk rather than in the liver and lungs, which would have been its natural seat if conveyed before birth through the blood. Not a few of the obstinate and fatal bowel diseases of sucking children and calves are in reality tuberculosis of the bowels induced by the infected milk. What runs in a family, then, is rarely hereditary disease. It is, in the great majority of cases, only a hereditary susceptibility to the disease—tuberculosis; but it is none the less a fearful legacy, being often so potent that the disease attacks certain families as a matter of course, while other families can count on a practical immunity. In the human family this is notorious. In cattle it is no less remarkable.

2. *Close buildings.* Lack of ventilation renders the air impure by repeated breathing. It is so favorable to the propagation of tuberculosis that it has been looked upon as the sole cause (Macormac). Though now certain that this cannot produce tuberculosis at all in the absence of the germ, yet it is such a potent accessory cause when the bacillus also is present that its importance cannot be too highly appreciated.

For the mild cases of tuberculosis in man, life in the open air, day and night, in a genial climate, with pure air, affords one of the best grounds for the hope of recovery or mitigation.

3. *Dark stables.* Dark stables are usually dirty and ill-ventilated, and, as such, lower the general health of the inmates, which are then strongly predisposed to tuberculosis. The darkness, however, acts indirectly in depriving the tissues of the body of their due supply of oxygen. The formation of green pigment (chlorophyll) in plants and of red pigment in the blood globules is due to the action of light. In darkness both disappear. But the red globules of the blood are bearers of oxygen to all parts of the body, and if these globules are deficient the whole body is denied its due aeration. The final result is as if the air contained little oxygen; in other words, as in the case of a closed building without any means of renewing the air.

4. *Insufficient or unwholesome food.* Overtaxing, lack of food, and indigestible or innutritious food agree in producing practical starvation and weakness with increased susceptibility to tuber-

culosis. Hence this disease is the scourge of the half-starved poor and no less of the rich, who abuse their digestive organs and court chronic dyspepsia. So, too, in our dairy herds, the stimulating ration for milk, the warm drinking water, and warm atmosphere, together with the enforced rest in the stalls for months at a time, and the clean, careful milking, soliciting the gland to act to its extreme capacity, all tend to a lowering of the general health and an increased susceptibility. This sufficiently illustrates how the cow, which has been made a milking machine, and which to this end must produce a calf every year, becomes dangerously susceptible to any tubercle bacillus to which it may be exposed. We have developed most valuable qualities at the expense of hardihood, and we must take the consequences. The argument is not that we should part with acquired powers which give the animal its high value, but that we should recognize the attendant dangers and rigorously exclude the tubercle germ.

5. *Breeding too young.* Breeding of immature animals is a most fruitful accessory cause of tuberculosis, as the demand made upon the system for further growth, for the nourishment of the unborn offspring, and later for the nursing of the calf, or for the dairy yield, undermines the strength and vigor. In different families of that marvellous dairy cow, the Jersey, this has been carried to such an extent that discredit has been thrown upon the whole breed as one especially prone to tuberculosis.

6. *Inbreeding—High breeding.* Inbred families of cattle are proverbially subject to tuberculosis. This is due partly to a resulting constitutional weakness, which often shows itself in an increasing indisposition to breed too near relatives, though still fertile with strangers. More frequently it depends on the intensifying and fixing of personal and family characters. The susceptibility to the germ being equally strong in both parents, becomes intensifying in their common offspring, just as the beef or dairy characteristics are improved. Indeed, the qualities which make an animal valuable for the butcher or milkman are exactly such as favor tuberculosis.

The germ of this disease lives by preference in the lymphatic system, either in the lymphatic glands or in the loose connective tissue forming the lymphatic networks leading to these glands. Now the breeds which are pre-eminent for early maturity and rapid fattening or for a high yield of milk are remarkable for their excess of connective tissue, as shown by the

delicate mellow skin, and in the case of the Channel Island cattle by the unusually large lymphatic glands. This helps to explain why certain families of beef-making cattle have been virtually ruined by tuberculosis.

Yet it would be equally wrong to abandon the improvement of our beef and our milking breeds. The improvement already attained is essential to successful competition in the market, and prospective improvement will be no less essential in the future. The true and only real remedy is the extinction and exclusion of the bacillus of tubercle.

7. *Ill health.* All acute and chronic diseases leave the system weak and with less power of resistance to other diseases. Above all, we must fear long-standing diseases, which produce emaciation and weakness; fevers, which interfere permanently with the blood-forming process; diseases of the digestive organs, which hinder the requisite preparation and absorption of nutritive elements, and diseases of the lungs, which form a raw or weakened surface on which the bacillus can grow without hindrance. Again, the germ lives best in a slightly alkaline or neutral medium and is weakened by acid contents of the stomach during vigorous digestion. But in digestion the contents may be too much lacking in acidity to prove hurtful to the germ, and the imperfectly digested morsels enclosing the bacillus may be passed on unchanged into the alkaline intestine, a field especially favorable to the development of tuberculosis. Again, in the intervals between meals, when the acid secretion is arrested, the bacillus in drinking-water may easily pass through the sentinel stomach to develop in the intestines.

8. *Chemical poisons in the tuberculous body.* The soluble chemical poisons in the system are a potent cause.

Lesions and symptoms of tuberculosis. Tuberculosis appears under two great types: the acute and the chronic, the first of which may run a fatal course of four or six weeks, while the second may last for many years. At the outset in the acute form, and for a great length of time in the chronic, the disease process may be confined to one organ or to one region of the body, and, therefore, the symptoms may vary exceedingly according to the particular organ attacked.

In many chronic cases, with the tubercles confined to one organ or locality (lymphatic glands, liver, spleen, pancreas, etc.), the victim may be in good condition, and no signs of disease may be recognized by the owner or veterinarian.

In acute cases, on the other hand, and when the tubercles are generally diffused through the body, there are usually fever, wasting, and emaciation, in addition to the characteristic symptoms of disease in particular organs. The lesions being caused by the colonization and local multiplication of the bacillus, they tend to assume a rounded or nodular form, from which has been derived the name of tubercle. Such nodules may, however, be absent, the diseased product being a diffused infiltration and thickening of the affected part.

The early nodule may vary in size from a millet seed up to a pea or more. It is first red, congested, and firm; soon it may become gray in the centre, though still red outside. With the grayish discoloration comes a gradually extended death of the mass (coagulation necrosis) and disintegration into a more or less soft cheesy looking material (caseation).

In cattle and chickens this cheesy nodule tends to remain firm, and it may even become gritty through impregnation with earthy salts (calcification). Exceptionally it will soften into a semi-liquid, whitish débris resembling an abscess; and this excessive softening is the usual course of tubercle in swine.

In some cases, however, the tubercle does not break down into a dead, cheesy mass, but develops into firm, fibrous, rounded nodules, hanging in clusters from the lungs, inside of the ribs or skin, and known as pearl disease (perl-knoten), grapes, etc. This form is particularly common in cattle. In man may be found nearly all forms of the disease, the primary hard-red congested nodule, the same with its grayish disintegrating centre, the firm, caseated mass, the same further softened into a yellowish, semi-liquid, pus-like mass, and in addition an open, unhealthy sore caused by the breaking down of the tuberculous growth on the skin (lupus), or intestine, etc. Similar tuberculous growths are found on the skin or mucous membrane of the bowels and throat of cattle and other animals. In all the many forms and seats of the disease the bacillus may be found in the affected parts and the morbid discharges from the lungs, skin, open sores, etc.

SYMPTOMS IN CATTLE. 1. *Tuberculosis of the lungs.* In the chronic cases, which are by far the most common, this may last for months and years unperceived, in acute cases it may prove fatal in a month. In recent slight chronic cases there may be no other ground of suspicion than an occasional cough when the animal leaves the hot stable for the cold outer air, when it

is suddenly raised in the stall, when it runs for a short distance, when it drinks cold water or eats dusty food. The cough is usually small, dry, wheezing, and may be repeated several times. When run or driven rapidly the animal proves short-winded, yet it may show as good spirits, as clear and full an eye, as smooth a coat, as supple and mellow a skin, as good an appetite, as rich and abundant flow of milk, and as much propensity to fatten as its healthy fellows. An accomplished diagnostician may detect altered sounds on percussion and auscultation of the chest; but from the difficulty introduced by the heavy muscular shoulder, the frequent variations in the size of the heart, the rumbling and crepitating sounds from the stomach and bowels, which, according as they are full or empty, press forward and diminish the size of the lungs and greatly mask or modify the results, even the able practitioner cannot be trusted to detect these, and the case fails to be recognized.

There may be a flow from the nose in which the bacilli should be detected by the microscope, but cattle have a habit of cleaning the nose with the point of the tongue, so that the virulent particles are difficult to secure, and when secured they prove to contain few bacilli, so that a failure to find these would not be so assuring as it would be in man.

As a large proportion of cases of chronic tuberculosis of the lungs are of this kind, the tuberculin test, to be noted below, becomes practically indispensable. When the lungs become more extensively involved, symptoms are more distinct and reliable, and the animal usually falls off in condition, yet in many cases cattle in good condition are killed for beef, and the lungs and ribs are found to be literally covered with clusters of fibrous tubercles (grapes). Usually in advanced cases the hair is dry, lustreless, and erect in patches, especially along the back; the skin is dry, powdery, and rigid, without its customary mellow touch or mobility on parts beneath; the eyes are less prominent and brilliant; the breathing is more or less easily accelerated; the cough, frequent and easily roused, is often gurgling or rattling, and may cause a discharge from the nose of a whitish flocculent; sometimes gritty material, and the flocculi bacilli may be found.

The breath is heavy and mawkish. Pinching of the back at the shoulder or loins may cause wincing, groaning, or cough, as may also pinching above the breastbone or striking of the ribs with the fingers or fists.

Percussion over the ribs reveals spots where there is a lack of resonance, apart from the solid masses of the heart, liver, spleen, and stomach contents, and listening over these spots will detect that variety of morbid sounds familiar to the physician, the most prominent being rubbing, wheezing, creaking, or fine crepitation, mucous rattling, and various blowing sounds. A remarkable feature of tuberculosis, distinguishing it from many other forms of lung consolidations attended by unnatural sounds, is the occurrence of such changes in patches with intervening spaces of sound lung. Ordinary inflammations more commonly attack one portion and spread from that as a centre extending the solidification in one or all directions. Arrived at this stage, the animal usually fails to make flesh satisfactorily on the best feeding, and milk is not only lessened, but becomes poor, blue, and watery.

The tubercles tend also to form more in other organs, notably the lymphatic glands and bowels, and digestion and assimilation being thus seriously interfered with, emaciation advances more rapidly.

This advance may be largely accounted for by the fact that the infecting expectoration brought up with the cough is largely swallowed to affect stomach and bowels. The animal has now a diminished and capricious appetite, irregular, infrequent, slow rumination, and slight bloating after meals. The temperature is frequently higher in advanced stages. Everyone can recognize the consumptive animal in the advanced stage of lung tuberculosis. It is miserable, poor, and wastes day by day; the dry coat of hair stands erect; the harsh, scurfy skin clings tightly to the bones; the pale eyes are sunken in the sockets; tears run down the cheeks; a yellowish, granular, fetid, and often gritty discharge flows from the nose; the breathing is hurried and catching; the breath fetid; the cough is weak, painful, and easily roused. Tapping the ribs with fingers, or first applying the ear, detects far more extensive changes, including in many cases evidences of blowing into empty cavities (vomica) and loud gurgling. Temperature may vary from below normal to 107° F. To give means of diagnosis of tuberculosis from some diseases of the lungs which most resemble it in symptoms (lung worms, hydatids, actinomycosis, etc.) would unduly extend this article without corresponding advantage to my fellow-men. Tuberculosis of the stomach, bowels, and mesentery glands in animals living on milk gives rise to

indigestion, fetid diarrheas, bloating, and finally enlargement of the superficial lymphatic glands, and the affection of the lungs if the animal should survive long enough. In older ones there is impaired, irregular appetite and rumination, slight bloating after meals, a tendency to scour when liberally grained, costiveness, alternating with scourings, colics, and usually a more pronounced wasting than in lung diseases. The rectal examination may detect the enlarged mesentric glands.

2. *Tuberculosis of womb and ovaries.* These and their supporting membrane and ligaments are often implicated in the bowel disease, giving rise to undue generative excitement. The affected cow is usually sterile sooner or later, parting with any ovum that may have been impregnated. Her heats may become more intense and last longer—till general tuberculosis sets in.

3. *Tuberculosis of liver, spleen, or pancreas.* The liver is one of the first organs to suffer in infection through the stomach and bowels, and it may be exclusively affected in calves and even in mature animals.

There may be impaired appetite and indigestion, bloating after meals, and in exceptional cases jaundice; but often an indefinite ill health is all that can be detected. Pancreatic and splenic tubercle are marked by similar obscurity of symptoms till the disease becomes generalized.

Tuberculosis of kidneys and bladder may be attended by extra sensitiveness of the loins to pinching and frequent passing of urine, more or less discolored by blood mixed with purulent matter. The microscope may reveal the bacilli a ter they have been stained. Tuberculosis of the throat and pharyngeal glands is a common form in cattle. Attention is drawn by a wheezing breathing, the sounds coming from the throat; the glands around that part are felt to be enlarged unequally on both sides, or shrunken and of gristly hardness, or softened, and even fluctuating on pressure. There is usually a loose gurgling cough and some difficulty in swallowing; small tubercular growths may exist on the lining mucous membrane, and this sometimes extends into the air-passages and involves the larynx. The udder is also liable to disease. A portion of a single quarter is usually first affected, causing a circumscribed swelling harder than the rest of the gland, but not hot or painful; this gradually extends to the whole udder. With this extension the gland becomes harder and the milk lessens, more watery and clotted; the lymphatic glands in front of the udder

and behind are enlarged and hardened. It gradually advances till the milk appears watery or grumous, when it is noticed by the milker.

In cattle the lymphatic glands are often found to be tuberculous to the exclusion of the internal organs, and as this form of the disease tends to become chronic it is likely to be overlooked for a length of time.

4. *In addition to those already cited, there may be here named:* The submaxillary glands are almost imperceptible in their natural condition, may swell up to any size, soften, burst, and discharge a cheesy matter. They are most liable to be confounded with actinomycosis of the same region, but do not show the almost microscopic, hard, yellow clusters of the actinomyces. They yield in place the specific bacillus. The glands inside the chest, mediastinal, bronchial, etc., give no easily available symptom. The same may be said of the glands above the sternum and below the spinal column. Of the more superficial ones, the glands in front of the shoulder, above the stifle, external inguinal, the posterior cervical, may be easily noticed if at all enlarged, and may be taken hold of in thin cattle. The deep-seated lymphatics are also liable to disease, but may not be individually referred to; they rarely show as external swellings. Tubercles may appear in any part of the skin. The lymphatic glands may become irritated and congested, and swell, so that their mere swelling should not be sufficient evidence of tuberculosis.

5. *Further evidence is demanded.* The bones and joints are also affected most commonly in young, growing calves. As the disease usually extends from the gristly, growing substance in the bones of the joint surfaces, the trouble is recognized as disease of the joints and cancellated tissues on the ends of the bones. The joints swell and the ends of the bones enlarge and become tender. The disintegrated bone may even crumble and the sharp spicula protrude through the skin.

The above outline of symptoms seen in cattle is rendered necessary by the invariable question: "How can I recognize it?"

THE INTELLIGENT MAN will realize from the partial sketch above that it is no simple matter to diagnose tuberculosis, and not listen to the man that boasts loudly but really knows little.

In the multitude of equivocal and occult cases further tests must be applied, as the microscopic search for the bacillus which has been incidentally referred to, inoculation may be

noticed. This consists in the introduction into the peritoneum or other parts of the guinea-pig, or other animal, of some of the suspected product (discharge from the nose, milk, juice from an enlarged gland, etc.). General abdominal tuberculosis should be present in the guinea-pig in thirty days. The tuberculin test gives prompt results and is less open to fallacy.

Tuberculin or Koch's lymph consists in the concentrated sterilized liquids in which the bacillus tuberculosis has been grown. It contains no living bacillus, all germs having been killed by heating; but it does contain the chief poisons which are produced in the tuberculosis body and which bring about all the diseased process in such body. A possible exception may be made of any such poisons as are destroyed by heat if any such there be in tuberculous products. It must be distinctly understood that in every contagious disease there is: 1, the germ which grows and multiplies in the susceptible animal's system, but is not, in itself and by its mere presence, necessarily injurious; and, 2, the products of the life of that germ which may or may not be poisonous. The many germs that enter the body have products that are not appreciably poisonous, and therefore produce no disease, whereas the few that do manufacture poisonous germs cause our different contagious diseases. Tuberculin consists of chemical poisons which the bacillus secretes or manufactures, and on which the force and all the manifestations of tubercle in the tissues are chargeable. Having no living germs, it cannot increase its own substance, nor can it cause tuberculosis in a healthy system, as it is soon thrown out of the body by the kidneys and other channels, and its power for evil is at an end; yet none the less is it the immediate agent through which all the destruction worked by tuberculosis is carried on. Where the bacillus tuberculosis lives and multiplies in the animal body these chemical poisons are being constantly formed, and thus its pernicious action is continuous, not only in the seat of the tubercle, but through the whole system.

The tuberculin test is based on the fact shown by Koch that it increases the activity of the disease process in tubercle and affects the whole animal body, producing a reaction or rise of temperature in a marked degree. On the ordinary tubercle as seen on the surface, the frequent use of tuberculin produced a more active process of cell growth, leading to degeneration and death, so that there was more speedy transition from red con-

gested nodule, through the grayish degeneration into the dead, cheesy mass, cut off from all blood circulation. But deeper tubercles usually exist, and these are similarly stimulated and their degeneration hastened by the tuberculin, thus rendering tuberculin almost useless as a curative agent, but makes it of the highest value as a test of tuberculosis in animals. The minute dose which has no effect on a healthy cow, horse, or pig, when employed on the slightly tuberculous one produces an acceleration of the disease process and in eight to fifteen hours a material rise of temperature. This has been now employed on thousands of cows, and those that use it most value it most highly. I have used it on a large number of cattle during the past year, and while examining a herd of domestic cows by the ordinary means, that is, without the aid of the tuberculin test, discovered one cow that I suspected, and ordered her to be tested with tuberculin. Through a mistake of the herdsman, that was not discovered till after the examination by the tuberculin test, he submitted the wrong animal; she was a cow of six years old, apparently in good health, and would dress about 700 pounds of beef, and did not show the slightest trace of tuberculosis by ordinary means, and when tested by Koch's lymph she proved to be diseased, her temperature rising to 108° F. fifteen hours after the injection. The *post mortem* showed tubercles in most of the lymphatic glands, lungs, kidneys, adipose tissue, and, lastly, the liver; it contained a tubercle which I have preserved in my office, weighing several pounds.

This led to a test of the rest of the herd with tuberculin, and I discovered that 50 per cent. were affected. This is only one case out of a large number which, if I was to relate, would occupy too much space. In a herd of 37, reaction after tuberculin occurred in 31, while 6 gave no reaction. When killed the 6 proved sound, and the 31, without exception, tuberculous.

Infection by bacilli in meat and milk. First, however, it will be instructive to compare the geographic distribution of cattle and that of tuberculosis, and show the intimate relations of cattle to man as a potent agent in the extension and maintenance of consumption in the human family. To the student of this subject it is plain that where cattle are few or absent, consumption is relatively less prevalent in man. In northern Norway, Sweden, Lapland, and Finland, where reindeer constitute the chief farm stock, about Hudson Bay and in the islands of the Pacific, where no cattle exist, and in the Scottish

Hebrides, Iceland, and Newfoundland, where cattle are few, tuberculosis is less prevalent in man.

In Algiers (a resort for consumptives) the cattle are few and live in the open air, apart from the cities, and tuberculosis does not increase among the natives. In Italy (another resort for consumptives), where cattle are housed, tuberculosis has become the scourge of man and beast. In Australia (a great resort for English consumptives) the disease, formerly unknown, has become exceedingly prevalent, and the same is becoming true of our own Minnesota, formerly so lauded as favorable to weak lungs.

Our Northwest Indians furnish the most striking illustration of infection derived from cattle and fostered in man by unhygienic surroundings.

Dr. Treon, in the *American Practitioner*, describes the poor, emaciated, diseased animals furnished to the tribes, how the Indians eat the liver, tallow, and entrails raw and fresh, and how the carcass is dried, pounded, and packed in the skins, to be eaten later without cooking. The meat is eaten though the animal may have died of disease. Dr. Holder, in the *Medical Record* (August 13, 1892), gives the Indian mortality from consumption as 50 per cent. of all deaths at Green Bay, Wis., Tulalip, Wash., and Western Shoshone, Nev. He says that at Lower Bruti, Dak., scrofula is present in 60 per cent. of the Sioux under twenty-one years, and that at Crow Creek, Dak., 50 out of a total Indian population of 1200 die yearly of consumption and scrofula. These are extreme examples, it is true, in which the transmission and fostering of the disease by cattle are extended and aggravated by overcrowdingand every imaginable unhygienic condition among the human consumers.

Lockport, N. Y., December 12, 1894.

A STATE VETERINARIAN FOR CALIFORNIA.

California is about to consider the wisdom of establishing the office of State Veterinarian with Assistant Veterinarians in the counties of that State. An act has been drawn as follows:

Section 1 provides for the appointment by the Governor, with the approval of the State Board of Health, of a State Veterinarian who shall be a graduate and shall hold office for a term of four years.

Sec. 2 provides for said Veterinarian taking the usual oath of office as a State officer.

Sec. 3 provides for the salary and necessary expenses of the office.

Sec. 4 provides that it shall be the duty of the Board of Supervisors, with the consent and approval of the State Veterinarian, to appoint competent and skilled County Veterinarians, and that said Veterinarians shall hold a license of the State Veterinary Medical Board to hold office for four years, to be removed for good cause by order of the State Veterinarian or the Board of Supervisors.

Sec. 5 provides for County Veterinarians taking the necessary oath of office.

Sec. 6 provides for salary and expenses.

Sec. 7 provides for the quarantining of all animals by and with the consent of the State Board of Health and that the duties of County Veterinarians shall be prescribed by the State Veterinarians.

Sec. 8 provides for all persons having diseased animals supposed to be dangerous, contagious, or infectious to report the same immediately to the County Veterinarian, and through him to the State Veterinarian.

Sec. 9 refers to the County Veterinarian keeping a record of all cases so reported and to take such measures as may be necessary until relieved by the State Veterinarian.

Sec. 10 provides for the State Veterinarian taking control of all cases of infectious or contagious diseases among the domestic animals, and to adopt such measures for their suppression and eradication as may be required, as well as the quarantining of places and districts, and all other regulations as to handling, treating, feeding, etc., that may be necessary. Also the slaughtering and appraisement of those necessary to control the diseases and protect the health of the public and domestic animals in such localities.

Sec. 11 provides for reporting the same to the Governor and the issuing of any proclamation that may be necessary.

Sec. 12 provides for the appraisement of animals destroyed, first by the State Veterinarian, and, if this is not satisfactory, by three appraisers. The appraisement for horses and for mules shall not in any case exceed seventy-five dollars ($75). Twenty dollars ($20) for cattle.

Sec. 13 provides for the method of reimbursing the person or

persons whose animals are destroyed, and states that they shall not be paid more than two-thirds or less than one-half of the appraised value.

Sec. 14 provides for the contingency of animals being brought into the State in a diseased condition for the purpose of being slaughtered, and securing reimbursement for the same.

Sec. 15 provides for any violation of the act in the shipping, selling, etc., of any animal affected with any contagious or infectious diseases when known or when said animals have been placed in quarantine, with a fine and penalty for the same.

Sec. 16 is evidently aimed at railroad corporations or others who may knowingly bring into the State diseased animals, and a fine and penalty to be imposed.

Sec. 17 provides a penalty for interfering with the duties of State or County Veterinarians.

Sec. 18 provides a penalty for the violation of any of the provisions of this act.

Sec. 19 provides for expenses for supplies and materials necessary in the work to be done.

Sec. 20 provides that all fines recovered in the provisions of the act shall be paid into the county treasury of the county where the same are collected.

Sec. 21 provides for the State or County Veterinarian having the power to call upon sheriffs, deputies, or other officers to aid in enforcing the provisions of the act.

Sec. 22, which is something entirely new, provides for the work as State work, the right to co-operate with any board or commission of the United States that may be provided by any present or future act of Congress for dealing with contagious and infectious diseases among domestic animals.

Secs. 23, 24, 25 provide for the annual report of the State Veterinarian, for the act to go into effect, and to repeal all other acts inconsistent with the one proposed.

This is followed by a summary of the total number of horses, mules, milch cows, oxen, sheep, and swine in California, which is in round numbers 6,200,000, and the total value, $54,000,000. It is estimated that the annual loss in California from contagious and infectious diseases is $1,600,000. Reference is then made to the various States having laws for the control of all infectious diseases among domestic animals, in which twenty-six States are enumerated, closing with an appeal for support of the act.

REVIEW OF SANITARY MEASURES.

THE State Cattle Commissioners of Massachusetts have just completed their annual report, and it contains much rich food for thought and consideration. Under the present law some 394 inspectors have been employed, 136 of whom are farmers, 56 veterinarians, 10 cattle dealers, 8 butchers, 20 doctors of medicine, 14 health officers; while the remainder, 132 in number, are not connected directly with either cattle or the public health. These various members are assigned districts for inspection of all contagious diseases and all carcasses of animals slaughtered under this act. Neat cattle are inspected semi-annually, March and October. The total number of cattle in the State reaches 233,536.

Previous to October 4, 1894, a physical inspection only was made. Since that time tuberculin has been used for the better detection of tuberculosis. Up to December 15, 1894, 164 town inspectors had reported 39,072 examinations, with 236 cases of tuberculosis. In using tuberculin skilled men only were employed, numbering 33.

In Nantucket out of 665 animals six were found diseased, and all of these were of animals imported from the main land or had been in cohabitation with such animals.

The report recites in detail the work at Brighton and Watertown markets, and says that, whether or not, in view of the circumstances under which the animals have to be examined, the tuberculin test can accomplish its best results. Conditions of excitement incident to recent travel, novel surroundings, etc., complicate the work. When all conditions are under control of the examiner, the temperature chart shows regular and consecutive results which can be relied on, but, with the manifold number of unseen conditions which may come in under the necessary conditions at these markets, complete success can hardly be expected. Such errors as have occurred have resulted from these unappreciable conditions. No other board has had experience from week to week as a guide. The result of the work for the first six weeks is as follows:

	Nov. 21.	Nov. 28.	Dec. 5.	Dec. 12.	Dec. 19.	Dec. 26.
Examined . . .	270	187	154	308	303	170
Condemned . .	26	25	16	18	14	11
Tuberculous . .	23	18	8	17	13	10
Not diseased . .	3	7	8	11	1	1
Held for retesting .	1	1	3	5	19	10

This table shows 6.21 per cent. of diseased animals, and that in judging 1432 animals twenty-one mistakes have been made; that fewer errors occurred during the last three weeks than in the earlier experiences. Under the conditions controlling the board does not consider this result discouraging. The general summary of work is as follows: Whole number of cattle reported by inspectors and others, 3295; whole number examined at markets, 1432; whole number examined at Nantucket, 665; total, 5392.

All these were tested with tuberculin, and there were found to be tuberculous: From inspectors and others, 810 or 24.58 per cent.; from markets, 89 or 6.21 per cent.; from Nantucket, 6 or 0.9 per cent.

It should be remembered that the inspectors' cattle were all suspects on physical examination. The market cattle probably furnish a fair representation of the condition of cattle in the State.

After discussing the tuberculin test the report concludes that the test may be relied upon, provided the necessary care has been observed. Criticisms as to its unreliability are discussed at some length, and associated with this is a widely distributed collection of indorsements of its use by scientists; and they further say that, after noting so many errors from only a physical examination, it is not apparent why tuberculin should not be used because it occasionally results in an error in diagnosis. They comment on the absence of reliable statistics to show the prevalence of the disease, and refer to the impossibility of accomplishing this before the use of tuberculin was adopted.

The use of milk from tuberculous cows is strongly disapproved, even though the disease may be in its primary stages. They state that no practicable test can be applied to milk, as it can only be purified by purifying the herd. The question of milk being sent in from herds outside of the State is referred to and commended to the attention of the Legislature.

One hundred and sixty cases of glanders have been examined and condemned.

A small outbreak of hog cholera, involving twenty-five herds, is also reported.

In connection with the commission they have established a laboratory for microscopical assistance in their work and the production of tuberculin.

The report discusses the question of the compensation by the State to owners of animals killed for infectious diseases, pre-

senting the arguments for full compensation and the considerations that may be urged against it. It recommends full compensation to cattle owners in cases of condemnation for tuberculosis during the present campaign of extermination.

REVIEWS.

Friedberger and Frohner's *Pathology and Therapeutics of the Domestic Animals*, Volume 1. Translation by Prof. W. L. Zuill, of Philadelphia. No more welcome volume has come to the English-speaking and reading veterinarian than this admirable work of so much everyday value to the general practitioner in veterinary medicine. Elegantly printed, with clear, distinct type, bound in cloth, it bears evidence of the highest character of the printer's art. There are no higher authorities the world over than those whose labors produced this valuable contribution for their fellow-countrymen, and no better work could have been offered to those who are dependent on English literature for assistance and advancement than this splendid contribution of Prof. Zuill. No veterinary or comparative science library can be complete without this work, and none will be more appreciated. We bespeak for it a wide circulation, a generous reception, and the grateful appreciation of all for the labor and expense that have placed it within the reach of so many and among those where there existed so great a need for such a work.

The fifth edition of Armatage's *Every Man His Own Horse Doctor*, with Blaine's *Veterinary Art*, has just been issued. Enlarged, partly rewritten and strengthened in many ways, it still has its place in veterinary literature. Its descriptive part and illustrations are still worthy of perusal and examination. While not destined as a text-book, it, with many others of a similar character, lessens in value with each successive edition, and in these days, when greater special technical skill is hourly demanded, the worth of such a volume, designed to make every horse owner his own horse doctor, becomes more problematical.

Works of this character will always be sought by veterinarians for consultation and to review from time to time those forms of diseases which are more or less infrequent and to familiarize one's self with the views and conclusions of Armatage, whose recognition as a skilled veterinarian has been generously conceded.

EDITORIAL.

BELGIUM has just closed its ports against the importation of American cattle on the grounds of having discovered "contagious pleuro-pneumonia." This practically closes all the great centres of Europe, where American cattle have been in the past shipped in large numbers, and it is a grave reflection upon the Belgian veterinary authorities that they have fallen into the serious and grave error of charging the United States with having "contagious pleuro-pneumonia" within its borders. There are no veterinarians in the world more skilful and competent in the diagnosis of "contagious pleuro-pneumonia" than American veterinarians. They have had a training and experience second to those of no other country; and it is to be said to their honor and credit that they are the only veterinarians in the world who have successfully stamped out the disease wherever it has secured a foothold, and they challenge the world, and offer every facility that can be afforded to any committee or body of veterinarians representing the different countries of Europe to come here and find within our borders a single herd afflicted with "contagious pleuro-pneumonia." It is now more than three years since a single acute outbreak has been found, and more than two years since a single chronic case has been discovered. Our nation has spent thousands and thousands of dollars endeavoring to find some locality where the disease still prevailed; and has finally been compelled to reduce the force of veterinarians in the Bureau of Animal Industry to an insignificant number, because of there being nothing for them to do in this direction, which was the chief line of their employment for a number of years. It is a very serious and grave reflection upon the veterinary profession abroad, and must in the end work incalculable harm to those countries upon the recommendation of whose veterinarians exclusion of American cattle has been advised, and will, in the future, greatly lessen them in the estimation of the younger members of the profession here whose ambition it has been to spend a portion of their college life in some one of the foreign schools. It will be but natural that their confidence must be weakened when they are confronted with the fact that with all their boasted advancement in veterinary science they have not yet learned to diagnose accu-

rately "contagious pleuro-pneumonia," which has been a bovine scourge of many countries for scores of years.

OBITUARY.—FRANK ARDARY, Jr., V. S., died June 2, 1894, after a brief illness of typhoid fever complicated with pneumonia. He graduated at the Christmas examination of the Ontario Veterinary College in 1883; then returned to his native city, Pittsburg, Pa., and soon established a lucrative practice; then with his brother, R. W., equipped and managed the largest veterinary hospital in the country. His genial disposition and kindly nature endeared him to a large number of friends. He was the leading veterinarian in the city, and very popular with all classes, and ranked high in Masonic circles. Unfortunately, he took no interest in veterinary circles outside of his own business, and never joined our societies.

DR. LUTHER MARTIN, an old and respected veterinarian of Philadelphia, died December 19, 1894.

THE veterinarians of California should certainly work shoulder to shoulder in the purpose there to secure legislation looking to the proper recognition of the veterinarian officially and as an associate in the better management and care for the health of the people of that State. The law which has been drawn may require some changes and modifications, but its aims and purposes are such that it should command the hearty support of every true votary of the profession in that State.

The veterinary profession in California has been greatly benefited by the workings of the new law, under which it is necessary for veterinarians in towns and cities of 2000 or more inhabitants to undergo an examination at the hands of a Board of Veterinary Medical Examiners, or submit a diploma from a recognized legally chartered veterinary college. Many of the worst empirics have been driven out of the large cities, and others have found it necessary to enter upon other vocations for which we have no doubt they were better fitted. The profession there is having the same experience as has been that of the profession in other States: that the greatest enemies to any law looking toward a higher standard for the veterinary profession are among the qualified men, for whom there was no cause or mitigating circumstances why they should not have given their earnest and unqualified support to such movements, which mean much for the general good of the profession. There will be no

effort to extend the law to any new districts until such time as there is a stronger growth in number of the veterinary graduates in that State.

A National Charter for the United States Veterinary Medical Association.—The committee having in charge the securing of an act of incorporation for our National Association are laboring hard with the Senate Committee on Agriculture and Forestry, to which this bill was referred, and it behooves every member of the Association to assist the committee in every way possible. They have made a strong appeal for its concession on the grounds that it would aid the veterinarians and also the veterinary schools of America. Reference is made in their appeal to the fact that America is the only country that does not recognize the veterinarian, nor contribute anything for the support of schools, nor accord them any grade in the army beyond the rank of a private. Reference is made to the independent education of the American veterinarians and to their success in dealing with contagious and infectious diseases of the country, as well as their usefulness in assisting the exportation of cattle and meat abroad.

The non-political character of the bill has been referred to, and it is hoped that every member of the profession, and particularly those who are residents in the States where the members of said committee reside, will at least write them a letter urging consideration of this measure.

We herewith publish the names of said committee and the States of which they are residents. Senate Committee on Agriculture and Forestry: James Z. George, of Mississippi; Wm. B. Bate, of Tennessee; Matt. W. Ransom, of North Carolina; Wm. A. Peffer, of Kansas; Wm. N. Roach, of North Dakota; Jas. McMillan, of Michigan; Wm. D. Washburn, of Minnesota; Redfield Proctor, of Vermont; H. C. Hansbrough, of North Dakota.

Correction.—We regret very much that through an incomplete report of the stenographer the following names of gentlemen elected to membership at the last annual meeting of the United States Veterinary Medical Association were not noted in the report in the November issue of the Journal: Jno. H. Adamson, M.D.C., Chicago V. C., 1327 H Street, N. W., Washington, D. C.; Don C. Ayer, D.V.S., A. V. C., Omaha, Nebraska; W. H. Dalrymple, M.R.C.V.S. Glasgow, Atlanta, Ga.; M. J. Treacy, M.R.C.V.S. Edinburgh, Fort Meade, S. D.

SOCIETY PROCEEDINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

THE monthly meeting of the Massachusetts Veterinary Association was held on September 12, 1894, at 19 Boylston Place. The members present were Drs. Becket, Burr, Fowle, Howard, Labaw, McKenna, Osgood, Parker, Winchester, and Winslow. Honorary member, Dr. Stickney. The chair was taken by Dr. Burr at 7.45 P.M.

The minutes of the last meeting having been read, Dr. Winslow moved that they be accepted as read; seconded by Dr. Howard. Carried.

The Secretary then read the report of the Committee on Tuberculosis. Dr. Winchester moved that the report be accepted; seconded by Dr. Osgood. Carried.

Dr. Winchester then said he had looked over the report, and thought it covered the ground; the points were well taken. He thought it should be published in journals, and he saw no reason why it should not be adopted and published.

Dr. Howard thought it pretty complete, and should be published in the agricultural papers.

Dr. Burr then suggested that the report should be considered in parts.

Dr. Osgood was of the opinion that the matter of disinfection should be treated a little more fully.

After some further discussion Dr. Osgood moved that the report be printed and copies mailed to the members of the Association, and the matter brought up at the next meeting; seconded by Dr. Stickney. Carried.

Applications for membership were then received from Dr. James T. Fisher, 98 Moreland street, Boston; Dr. Henry Lewis, Chelsea; and Dr. H. B. Hamilton, Albany street, Boston. The names of Dr. Lemuel Pope, Arlington Heights, and Dr. J. H. Walker, Taunton, were then brought up, and as no applications from them had been received, the Secretary was directed to forward application blanks to them.

The Committee on Credentials then reported favorably on the names of Drs. Lewis and Fisher.

New Business. Dr. Burr then called attention to the fact that members of committees are sometimes compelled to travel long distances to attend committee meetings, and he suggested that Dr. Paige be remunerated for expenses incurred in attending committee meetings in Boston. After considerable discussion the general opinion seemed to be that it was not advisable to establish a precedent by paying the expenses of those attending committee meetings.

Dr. Osgood moved that this meeting be considered the regular September meeting of the Association, and that the regular meeting of the Association be held on the fourth Wednesday of each month; seconded by Dr. Labaw and carried.

Dr. Osgood gave written notice that at the next meeting he would propose an amendment to the Constitution to provide for special meetings.

Dr. Parker then called attention to the meeting of the United States Veterinary Medical Association in Philadelphia, and asked that the Association should appoint delegates to attend the Philadelphia meeting.

Dr. Osgood moved that all those attending the meeting should be appointed as delegates; seconded by Dr. Parker. Carried.

The matter of spaying cows was then brought up for discussion by Dr. Osgood reading a letter relating to the spaying of cows. He had been doing a good deal of it lately, and so far the results have been satisfactory, although the time has not been sufficiently long to give the matter a thorough test. He has spayed about forty cows. In his experience cows are apt to gain in flesh unless carefully watched, and where they gain in flesh and get fat the feed should be dropped.

After some further discussion the meeting adjourned.

JOHN M. PARKER,
Secretary.

THE regular monthly meeting of the Massachusetts Veterinary Association was held at No. 19 Boylston Place, on Wednesday, October 24, 1894, at 7.30 P.M. The members present were Drs. Bunker, Emerson, Howard, Labaw, Osgood, Parker, Rogers, Winchester, and Winslow. Dr. Winchester occupied the chair.

The minutes of the last meeting having been read and adopted, the Chair called on Dr. Howard, as one of the delegates to the United States Veterinary Medical Association meeting in Philadelphia, to make his report.

Dr. Howard made an interesting report of the meeting. He referred to the report of the Committee on Education, to Dr. Harger's paper on "Neurotomy" or "Neurectomy," and to the papers on tuberculosis, as being especially interesting. In reply to an inquiry, he stated that the Comitia Minora recommended the expulsion of Drs. Lee and Becket in consequence of having sent out illuminated calendars. The Association finally decided to call the attention of Drs. Lee and Becket to the matter, so that they might have an opportunity to defend themselves.

The meeting closed on the last day with a most enjoyable visit to the Veterinary Department of the University of Pennsylvania, to the hospital of Dr. W. Horace Hoskins, and to the Zoological Gardens, finishing with dinner at the Colonnade Hotel.

Dr. Winchester, Dr. Osgood, and Dr. Parker, all reported having enjoyed the meeting very greatly.

Dr. Parker then reported for the Committee on Tuberculosis; after considerable discussion the report of the committee was accepted as one of progress, and certain changes were advocated in the report.

The names of Dr. James T. Fisher and Dr. Henry Lewis were then voted on, and unanimously elected to membership, and the names of Dr. H. B. Hamilton and Dr. Leonard Pope were reported on favorably and laid on the table for action at the next meeting.

New Business.—The Secretary then read a letter from Dr. Lee resigning from membership in the Association. Dr. Winslow moved that the resignation be accepted; Dr. Bunker moved an amendment "that Dr. Lee's resignation be laid on the table, and the Secretary instructed to write to Dr. Lee asking him why, in the event of his resignation not being accepted, he requests to be expelled." Seconded and adopted.

Dr. Osgood then brought up the matter of special meetings, and after some discussion Dr. Bunker made the following motion: that "special meetings can only be called by the President or upon written application of three or more members, or by vote of the Association." Seconded by Dr. Osgood and carried unanimously.

Dr. Osgood then informed the Association that in consequence of the generosity of Messrs. Hemenway, of Boston, and Morgan, of New York, Harvard Veterinary College is now enabled to do away with the subscription plan.

After some further discussion Dr. Bunker offered a resolution approving of their action, and by vote of the Association the consideration of the resolution was laid over till the next meeting.

There being no further business the meeting adjourned till November.

JOHN M. PARKER,
Secretary.

ONTARIO VETERINARY COLLEGE, TORONTO, CANADA.

THE Veterinary Medical Society connected with the above college has held semi-weekly meetings during the session, which have been very interesting and profitable to the members. Among the many good subjects brought forward which may be mentioned were the following essays: "Coal Tar and Its Products," Mr. W. L. West; "Diseases of Joints," Mr. F. V. Barrett; "Tuberculin as a Diagnostic Agent," Mr. H. D. Stebbins; "Physiology of the Kidney," Mr. H. Busman; "Eserine," Mr. L. J. Allen; "Origin of the Horse," Mr. R. C. Hill; "Distemper of the Dog," Mr. G. W. Harrison; "Tetanus," Mr. Wm. Fotheringham; "Cæsarean Section," Mr. W. R. L. Best; "Texas Fever," Mr. E. M. Hendy; "Parturient Eclampsia," Mr. H. S. Creighton; "Rot in Sheep," Mr. D. M. Waldo; "Lameness," Mr. J. M. Farquhar; "Simple and Periodic Ophthalmia," Mr. F. G. Shepard; "Foot Rot in Sheep," Mr. A. A. Moody; "Glanders," Mr. C. L. Megowan; "Cerebro-spinal Meningitis," Mr. A. J. Gibbons. The discussion which the different subjects brought forth were also interesting and instructive, and by their character indicated the general knowledge of the various subjects of the members, which augurs well for their success as practitioners.

The office-bearers for the session are: *President*—Prof. Andrew Smith, F.R.C.V.S.; *Secretary*—Edw. T. Handy; *Assistant Secretary*—H. E. Hensel; *Treasurer*—G. J. Brossar; *Librarian*—H. W. Witmer.

THE ONTARIO VETERINARY ASSOCIATION.

THE Annual Meeting of the Ontario Veterinary Association was held in the Veterinary College, Toronto, Canada, on Friday, December 21, 1894.

The President, Mr. W. Burns, V.S., opened the meeting with a few well-chosen remarks, and called for the reading of the reports.

The Secretary's, Registrar's, and Auditors' reports were then received and adopted.

Considerable discussion then ensued on the action of certain parties in issuing so-called veterinary dental diplomas. The issuing of these was very strongly condemned at the last meeting, tending, as it does, to bring legitimate veterinary science into disrepute, reputable members of the veterinary profession considering this so-called veterinary dentistry as a complete humbug. Mr. John Wende, V.S., also a member of the New York State Veterinary Association, remarked that that association also very strongly condemned the issuing of these veterinary dental diplomas.

Major Lloyd, Mr. Gibbs, Mr. C. Elliott, Mr. O'Neil, and others took part in this discussion, and it was ultimately resolved "That the same committee that were appointed last year should be continued, and that their efforts should be directed to suppress this humbug.

Mr. W. J. Wilson, V.S., of London, read an excellent paper on "The Dangers of Using the Meat and also the Milk of Diseased Animals as Human Food." He called attention to the toxic properties produced by the germ of tuberculosis (the bacillus tuberculosis) being especially injurious to consumptive patients, and that these products were still existing in the meat and milk, although the vitality of the bacillus itself may have been destroyed by cooking or otherwise. He recommended the establishment of public abattoirs and the inspection of meat by qualified men. He also recommended that dairies should be placed under suitable inspection, and that the hygienic conditions of milch cows should be looked to, cleanliness and sufficient air space being essential.

In the discussion that followed, in which Major Lloyd, Messrs. Shaw, Cowan, and others took part, it was remarked that the "tuberculin test" was a reliable diagnostic agent, but judgment must be used in applying it; that it is well to take the body temperature of other animals in the herd, not the injected, as variations in the temperature may be produced by accidental causes.

Mr. Cowan, Veterinary Inspector, said that it was well not to make unnecessary alarm in connection with tuberculosis; that the disease existed only to a slight extent in Canada amongst cattle—less than in most other countries—and that the disease was on the decrease here. He also said that the various Boards of Health have great power in looking into the milk supply; that there is all the law that is required in investigating the milk and meat supply, and in condemning tubercular cases.

The thanks of the meeting were voted to Mr. W. J. Wilson for his interesting paper.

Mr. A. Crowforth, V.S., of Lockport, N. Y., read an interesting and exhaustive paper on "Tuberculosis in Relation to Animal Industry and Public Health; its Prevalence and Importance." He said that it prevailed so extensively throughout the civilized world that no disease is so deserving of close study or of the enforcement of effective measures for its suppression. Cholera, yellow fever, and smallpox, which occasionally appear, creating universal terror and dismay, claim but few victims in comparison with this ever-present and universally devastating malady. These other plagues are quick, severe, and fatal, and therefore can be promptly recognized and even stamped out; whereas tuberculosis is slow and uncertain in its progress, and often escapes recognition for a long time. It may be classed with "*the pestilence that walketh in darkness*," while the other diseases named may be likened to the "*destructions that waste at noonday*." He gave statistics

showing the deaths in various parts of the world in the human race, and mentioned its prevalence as the same disease in the domestic animals, produced by the same micro-organism (the bacillus tuberculosis), and the difficulty of obtaining reliable statistics.

In the Middle Ages tuberculosis in animals was recognized as contagious, and laws were made against the use of affected carcasses as human food, which remain in force in Spain and Italy to the present day. In the early part of the present century its contagious character was doubted by medical practitioners; but at the present time, in the light of numerous investigations and experiments, all candid scientific observers accept the doctrine of its contagious character. He described the germ, its history, and mode of propagation, and also the accessory causes which tend to produce the disease. But some of these causes can produce the disease in the absence of the *bacillus*. He described the disease in the various organs and tissues of the body, and mentioned the difficulties experienced in diagnosis. He spoke strongly in favor of "tuberculin" as a diagnostic agent, and said those who had used it most valued it the most highly. In conclusion, he compared the geographic distribution of cattle and the prevalence of tuberculosis in the human race, and showed the ultimate relations of cattle to man as a potent agent in the extension and maintenance of consumption in the human family.

A discussion followed, in which Messrs. O'Neil, Wilson, and others took part, and a vote of thanks was tendered to Mr. Crowforth for his interesting and exhaustive paper.

Prof. Smith exhibited from the Museum of the Veterinary College specimens of "gangrenous ergotism" of the legs of cattle from cases he had investigated last spring.

The sum of $25 was appropriated for a medal to be competed for by students of the Ontario Veterinary College at the approaching spring examinations.

The following are the officers for the ensuing year:

President.—Mr. G. L. Robson.

Vice-Presidents.—H. Hopkins and D. Hamilton.

Secretary.—C. M. Sweetapple.

Treasurer.—W. Cowan.

Auditors.—Messrs. J. D. O'Neil and C. Elliott.

Directors.—Messrs. J. Wende, W. Burns, J. F. Quin, W. Gibb, W. J. Wilson, S. Holder, A. Crowforth, and W. Steel.

C. M. SWEETAPPLE,
Secretary.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

THE regular monthly meeting of the Keystone Veterinary Medical Association was held on Tuesday evening, January 8, 1895, at the office of Dr. Jas. B. Rayner, West Chester, Pa.

President Lintz called the meeting to order, and after roll-call by Secretary Rhoads the report of the Legislative Committee was called for. The Chairman, Dr. Hoskins, before summarizing the progress made in advancing the legislation looking to the establishment of a State Live Stock Sanitary Commission, read from the Philadelphia *Times* of the 7th inst. a special telegram from Harrisburg, stating that this bill had been so drawn as to make ineligi-

ble to appointment Dr. Francis Bridge, who is now employed by the State Board of Agriculture. This statement was characterized by Chairman Hoskins as a wilful, deliberate, malicious lie, and that those who furnished the information to the *Times* correspondent knew it to be so. He referred to such methods of warfare as being evidence of a weak cause, and that they would react against those who resorted to their use in bolstering up a weak movement. The most encouraging reports were made from a score of counties and districts. Drs. Rayner, Rhoads, and McAnulty all spoke encouragingly of the favorable responses they had met with and of the general approval they received in endeavoring to place these questions under the control and direction of a body of experts.

The subject for the half-hour talk was then opened, and Dr. Hoskins being accorded the floor, cited two cases of cerebro-spinal meningitis having come under his notice during the month, one of these proving fatal in a sorrel gelding used as a road horse. An interesting fact in conjunction with this case was the rapid loss of weight. On admission to his sanitarium the scales recorded a weight of 930 pounds; for eighteen hours the weight remained stationary; twenty-four hours later he weighed but 888 pounds; the next twenty-four hours recorded a further loss of 24 pounds, making his weight 864 pounds; eight hours later the horse assumed the recumbent position and paralysis became almost complete; estimated loss of weight 50 pounds, when it was deemed wise to destroy him.

The second case showing only incipient symptoms of lassitude, slight dragging of toes of hind limbs, very dry condition of feces; stationary in weight for the first fifteen hours, gaining successively four, six, ten, ten, and five pounds the following five days. In the first case inability to swallow water became complete after twenty-four hours. The second case was able at all times to drink. Two mules had died in the stable where these cases developed, some three weeks before from the same disease.

The probable causes as to food, drainage, improper light, ventilation, were discussed by Drs. Rayner, Lintz, and McAnulty, and its propagation through the atmosphere as a media was referred to specially by Dr. Lintz.

The lateness of the hour prevented Dr. Jas. B. Rayner from presenting his paper, and it was postponed to the February meeting.

W. L. RHOADS,
Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

THE thirty-third regular meeting of the Veterinary Medical Association of New Jersey was held at the State Street House, Trenton, December 13, 1894.

Meeting called to order at 12.05 o'clock. Nine members present and one delegate from the Pennsylvania Association, Dr. Thos. B. Rayner, of Chestnut Hill, Philadelphia, Pa. Minutes of previous meeting read and approved. The President's address was in the form of a report of veterinary practice as at present carried on in this State. In some counties there were more illegal practitioners than legal. As he had not finished the census of the whole State, he did not give any names, but would try and have the full list ready for the next meeting.

The Treasurer reported $35.74 in the treasury and all bills paid. Committee on Revision of By-laws reported the changes made, and the Secretary was ordered to report the same to Board of Trustees in writing. Delegates to sister Associations all had excuses.

Dr. Gerth being the only essayist present, read a paper on "Horse Meat as an Article of Food."

Meeting adjourned at 1 P.M. for dinner.

Meeting reconvened at 2.30. After the reading of several letters the discussion of Dr. Gerth's paper was resumed.

The Secretary was requested to read a copy of a bill proposed to be introduced in the Pennsylvania Legislature the coming session for the appointment of a State Cattle Commission. It was a well-drafted bill, and should become a law in every State in the Union.

Drs. Miller and Dustan reported the steps taken by them in reference to their names being used as reference on a patent medicine circular. Their report was accepted, and they were exonerated from further blame.

Meeting adjourned at 4.10 P.M. to meet at the same place in April.

S. LOCKWOOD,
Secretary.

THE MISSOURI VALLEY VETERINARY ASSOCIATION.

THE regular meeting of the Missouri Valley Veterinary Association was held Wednesday evening, December 12, 1894, at the Byram Hotel, in Atchison, Kansas, and for the members who were present a rare treat certainly awaited them.

President Stewart was there with his stereopticon, and, assisted by Dr. Wattles, the society was most profitably instructed in the minor details of "Meat Inspection;" President Stewart explaining each plate exposed in such a lucid manner that none could fail to understand hog-cholera, swine-plague, tuberculosis, pleuro-pneumonia, as well as a great many physiological and pathological specimens; and one and all were of incalculable benefit to the veterinarian.

Many communications were read. The society unanimously decided to use its influence to induce the United States Veterinary Medical Association to hold its annual meeting at Des Moines, Iowa, in 1895.

Resolved, That the Missouri Valley Veterinary Association heartily indorse the desire of the Iowa veterinarians, that the next annual meeting of the United States Veterinary Medical Association be held at Des Moines, Ia.

R. H. HARRISON, Atchison,
J. MCCURDY, Topeka.
Committee.

The resolution was carried.

Dr. Wattles' report as delegate to the United States Veterinary Medical Association was presented and ordered filed. A vote of thanks was given to Dr. Wattles for the interesting and valuable report.

Dr. McCurdy's well-prepared paper on "Veterinary Legislation" elicited much discussion, resulting in the Chair appointing Drs. McCurdy, Mayo, and Hunter a committee on legislation.

Dr. S. L. Hunter read a paper on "Tuberculosis" and "Tuberculin." The most original paper was Dr. Wattles' "Treatment of Ossific Diseases of Articulations of the Horse by Hypodermatic Injections of Iodine." String halt and eserine claimed their share of discussion.

Adjourned to meet at Topeka, the second Wednesday of February, 1895.

This meeting was a record-breaker in regard to its enthusiasm and unqualified success. Very truly,

S. L. HUNTER, V.S.,
Secretary.

FORT LEAVENWORTH, KANSAS, December 19, 1894.

SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

THE fourth quarterly meeting of the Schuylkill Valley Veterinary Medical Association was held in the rooms of the Board of Health of the city of Reading, Wednesday, December 19, 1894. Dr. S. G. Burkholder, the President, called the meeting to order, and Dr. U. G. Fridirici, Recording Secretary, called the roll. The Corresponding Secretary of the Association, Dr. Jas. W. Sallade, of Pottsville, was present, and Dr. F. H. McCarthy, the Treasurer, as well as the Trustees, Drs. Otto Noack, of Reading; Eli Snyder, Orwigsburg; J. C. Faughnan, Shamokin, were also present.

This Association was organized April 29, 1893, and now includes members of Lebanon, Carbon, Lehigh, Montgomery, Luzerne, Northumberland, Schuylkill, and Lancaster counties, and promises to be a very active organization.

Dr. Noack, of Reading, read a paper on "Milk and Meat Inspection," giving the law and practice in his native country, Germany.

The meeting was further entertained by a paper on "Purpura Hemorrhagica,"[1] by Dr. J. W. Sallade, laying great stress upon better ventilation and watering for the better handling of such cases.

The meeting indorsed the proposed legislative act for the creation of a "Live-stock Sanitary Commission."

DR. J. W. SALLADE,
Corresponding Secretary.

AMERICAN INSTITUTE FARMERS' CLUB.

AN important meeting of the American Institute Farmers' Club of New York City was held on Tuesday, January 8, 1895. The subject of tuberculosis in animals was one of the topics for discussion, and was participated in by Dr. Heath, of Brooklyn, who appealed for its solution in our herds and dairies on the basis of economy and justice to the public, to the farmer, and to the dairyman. He counseled against the reckless hand of slaughter, not because it was not swift and complete, but for the greater reason that the accumulation of property honestly is a slow and laborious process.

Veterinarian Moadinger, of Brooklyn, advocated preventive measures, the removal of tubercular animals from all herds, and said that this could

[1] Printed in this number of this JOURNAL.

be accomplished largely through better stabling, which would keep the animals from too close contact; good drainage, good food, pure water, and proper ventilation. He advocated greater care in the selection of attendants and milkers; that they be free from tuberculosis; that all fresh animals should be tested for admission to the herd.

Veterinarian Ackerman recommended the removal of all diseased animals from the herds; separation of milkers from breeding stock; spaying the milkers, and thus avoid the twofold drain of lactation and gestation which weakens the system and makes it a readier field for disease.

Veterinarian Finley in his remarks as to the tendency to recover, said there is a certain amount of resisting power in some, greater than in others, and greater at some times than at others.

Mr. E. G. Fowler, of the *American Agriculturist*, criticised strongly the movement in Massachusetts of general slaughter, and said that State was in a ferment from end to end. He condemned tuberculin as empirical, but when pressed for his reasons and for evidence of its unscientific value, he was compelled to acknowledged that this was only his personal opinion.

Veterinarian Pearson, of Philadelphia, strongly urged the value of tuberculin as a diagnostic agent, and completely combated the opinions expressed by Mr. Fowler with statistics, experience of many others, and an array of evidence that was too strong to be doubted.

Many farmers and dairymen spoke on the subject, covering the points of inbreeding, contamination by man, extermination of the diseased, and the quarantining of cases of human tuberculosis.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

THE following appointments of the United States Veterinary Medical Association have been made by the President, and acceptance on the part of the appointees has been received:

President.—W. Horace Hoskins, 3452–54 Ludlow Street, Philadelphia, Pa.

Vice-Presidents.—J. F. Winchester, Lawrence, Mass.; T. J. Turner, Columbia, Mo.; W. L. Williams, Bozeman, Mont.

Secretary.—Leonard Pearson, 2024 Pine Street, Philadelphia, Pa.

Treasurer.—Jas. L. Robertson, 409 Ninth Avenue, New York City.

Comitia Minora.—W. Horace Hoskins, *President*, 3452–54 Ludlow Street, Philadelphia, Pa.; J. F. Winchester, *Vice-President*, Lawrence, Mass.; T. J. Turner, *Vice-President*, Columbia, Mo.; W. L. Williams, *Vice-President*, Bozeman, Mont.; Leonard Pearson, *Secretary*, 2024 Pine Street, Philadelphia, Pa.; Jas. L. Robertson, *Treasurer*, 409 Ninth Avenue, New York City, *ex officio*. A. S. Clement, *Chairman*, 916 Cathedral Street, Baltimore, Md., Thomas B. Rayner, Chestnut Hill, Philadelphia, Pa.; F. H. Osgood, 50 Village Street, Boston, Mass.; Olof Schwarzkopf, 1629 Wabash Avenue, Chicago, Ill.; R. S. Huidekoper, 155 W. Fifty-sixth Street, New York City.

Committee on Intelligence and Education.—C. A. Cary, *Chairman*, Auburn, Ala; W. B. Niles, Ames, Iowa; Geo. C. Faville, 46 Charlotte Street, Norfolk, Va.; R. A. Archibald, Sacramento, Cal.

Finance Committee.—Wm. Dougherty, *Chairman*, 1035 Cathedral Street,

Baltimore, Md.; D. J. Dixon, 366 Washington Street, Hoboken, N. J.; L. H. Howard, 1440 Washington Street, Boston, Mass.

Committee on Diseases.—M. R. Trumbower, *Chairman*, 502 Third Avenue, Sterling, Ill.; M. H. Reynolds, St. Anthony Park, Minn.; S. J. J. Harger, 3608 Pine Street, Philadelphia, Pa.; John Faust, 209 Union Street, Poughkeepsie, N. Y.; R. R. Dinwiddie, Fayetteville, Ark.

Prize Committee.—Tait Butler, *Chairman*, Agricultural College, Miss.; L. McLean, 14 and 16 Nevins Street, Brooklyn, N. Y.

Army Legislation.—J. P. Turner, *Chairman*, Fort Myer, Va.; W. B. E. Miller, 527 Penn Street, Camden, N. J.; Jas. A. Waugh, 101 North Avenue, Allegheny, Pa.

Publication Committee.—A. T. Sellers, *Chairman*, 444 Benson Street, Camden, N. J.; Leonard Pearson, 2024 Pine Street, Philadelphia, Pa.; Jas. B. Rayner, West Chester, Pa.

Special Committees: Act of Incorporation.—Wm. Dougherty, *Chairman*, 1035 Cathedral Street, Baltimore, Md.; J. C. McNeil, 26 Fourth Street, Pittsburg, Pa.; F. S. Allen, 800 North Seventeenth Street, Philadelphia, Pa.

Revision of Constitution and By-Laws.—W. Horace Hoskins, *President*, 3452–54 Ludlow Street, Philadelphia, Pa.; J. F. Winchester, *Vice-President*, Lawrence, Mass.; T. J. Turner, *Vice-President*, Columbia, Mo.; W. L. Williams, *Vice-President*, Bozeman, Mont.; Leonard Pearson, *Secretary*, 2024 Pine Street, Philadelphia, Pa.; Jas. L. Robertson, *Treasurer*, 409 Ninth Avenue, New York City, *ex-officio*. W. B. E. Miller, *Chairman*, 527 Penn Street, Camden, N. J.; S. Stewart, 7½ St. James Street, Kansas City, Kans.; John M. Parker, 24 Essex Street, Haverhill, Mass.

Resident State Secretaries.—C. A. Cary, Auburn, Ala.; R. R. Dinwiddie, Fayetteville, Ark.; J. K. Thompson, Pueblo, Col.; H. P. Eves, 507 West Ninth Street, Wilmington, Del.; F. H. P. Edwards, Iowa City, Iowa; R. H. Harrison, Atchison, Kans.; Jas. B. Paige, Amherst, Mass.; R. A. Ramsey, Mexico, Mo.; W. L. Williams, Bozeman, Mont.; H. J. McClellan, Lansdowne, Pa.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

The California State Veterinary Medical Association held its annual meeting at the Baldwin Hotel, San Francisco, Cal., December 12, 1894.

The meeting was called to order by the President, Dr. H. A. Spencer. Upon roll-call the following-named gentlemen answered to their names: Drs. Maclay, Spencer, Sr., Wadams, Orvis, Fox, Archibald, Pierce, Jackson, Robin, Fabbi, Forrest, Williams, Graham, Eddy, O'Rourke, and Hogarty.

The minutes of the previous meeting were read and approved.

The annual reports of the Secretary and Treasurer were received and placed on file.

The Board of Examiners were granted further time on the application of Dr. J. A. Edmons.

The Legislative Committee, through their chairman, submitted the following report: Your Committee on Legislation beg leave to submit the accom-

panying bill for your consideration and adoption; further, we would recommend the adoption of the following resolution:

Resolved, That the bill as reported be presented at the next session of the Legislature, and that said committee be and they are hereby empowered to watch the progress of said bill through the Legislature. All of which is respectfully submitted.

The Secretary read the bill, whereupon, on motion of Dr. Fox, the report was adopted.[1]

The Secretary moved that five hundred copies of the bill be printed in circular form and distributed among the members of the Association. The motion was duly seconded and carried.

The Committee on Clinical Entertainment reported that they had procured several cases for the entertainment. Upon motion the report was accepted and the committee granted further time.

Under the head of applications for membership, the Secretary submitted the following names: J. R. Shaw, A. B. Wise, J. A. Edmons, J. Trullinger, J. J. Streets, B. W. Schodde, J. W. O'Rourke, S. A. Withers, A. J. Withers, E. J. Creely, and O. C. Baldy. The names were referred to the Board of Examiners.

The election of officers for the ensuing year resulted as follows: *President*—Dr. C. B. Orvis, of Stockton; *Vice-President*—Dr. R. T. Whittlesey, of Los Angeles; *Secretary*—Dr. R. A. Archibald, of Sacramento; *Treasurer*—Dr. D. F. Fox, of Sacramento; *Board of Examiners*—Drs. Maclay, Egan, Spencer, Sr., Graham, and Lemke; *Board of Directors*, the several officers of the Association.

The Secretary presented a bill for $10.50 for Secretary's supplies, etc., which was ordered paid.

The Secretary moved that when this Association adjourns it adjourns to meet in San Jose. The motion was duly seconded and carried.

Dr. Fox suggested the advisability of the Association indorsing some one of its members for the position of State Veterinarian. The matter was discussed in an informal manner by Drs. Spencer, Orvis, Fox, Pierce, and the Secretary. During the discussion Dr. Maclay moved to adjourn for dinner. On the motion being put the Chair, not being satisfied with an aye and no vote, called for a rising vote, which resulted in a tie, whereupon the Chair cast the deciding vote in favor of the motion. The meeting then adjourned to meet at 7 P.M.

Evening Session. At 7 P.M. the meeting was called to order by the President, Dr. H. A. Spencer, who called upon the President-elect to take the chair.

The new President, Dr. C. B. Orvis, upon taking the chair, delivered a few appropriate and well-chosen remarks, and as he was going to act in the capacity of an entertainer, he requested Dr. Spencer to take the chair for the rest of the evening.

Under the head of reading of papers, etc., and discussions, the Chair called upon Dr. C. B. Orvis to entertain the meeting, which he did by reporting three cases of intestinal obstruction from the formation of tumors and abscesses in the sublumbar region.

The reports were very interesting and instructive, and a very animated discussion followed their reading. The Chair closed the discussion with a few appropriate remarks.

[1] Synopsis of bill printed in this number.

Dr. W. E. Wadams was then called upon to entertain the meeting, which he did by offering an instructive and exhaustive paper on "Canine Distemper." The essayist described the disease in all its forms, giving the different symptoms and the different methods of combating the same. He also thoroughly described the different complications that might arise.

The reading of the paper was followed by a lively discussion, which was participated in by Drs. Maclay, Archibald, Orvis, Eddy, Fox, Pierce, Fabbi, O'Rourke, and Jackson. The Chair closed the discussion with a few remarks, and then called for reports of peculiar cases.

The Secretary reported a case of a cow whose milk contained so much acid that it was for all practical purposes useless. He said the cow had been changed from one food to another without changing the character of the milk. He also reported a few cases of what he supposed to be chronic pharyngitis, and he said that in some localities the disease seemed to be very prevalent in the late summer and fall of the year.

Dr. Orvis reported some cases of actinomycosis, and he exhibited some specimens taken from the tongues of two cows showing the ravages of the disease. He said the cows were almost starved to death when he was called in to see them.

Under the head of new business, Dr. Maclay offered the following resolutions:

Whereas, It has pleased the great Architect of the Universe to call from our midst one of our respected members; therefore, be it

Resolved, That in the death of Peter Burns this Association loses one of its most active members and most ardent supporters; as a man, as a citizen, as a husband, and as a father, he was beloved by all.

Resolved, That the heartfelt sympathy of the members of this Association be and it is hereby extended to the family of the deceased in this their hour of bereavement.

Resolved, That a copy of these resolutions be spread upon the minutes and a copy forwarded to the family.

Upon motion the resolution was adopted unanimously.

Dr. Maclay read the following resolution:

Resolved, That the thanks of this Association be and are hereby extended Dr. H. A. Spencer for the faithful and impartial manner in which he has performed the arduous duties of the office of President during the past year.

Upon motion the resolution was adopted.

The Secretary offered the following resolution:

Whereas, It has come to our notice that there are some of the members of this Association, and some who intend becoming members, who are violating Section 1 of the Code of Ethics, which states "that no member shall assume a title to which he has not a just claim;" therefore, be it

Resolved, That it is the sense of this Association that any member who refuses to discard, or who in violation of the Code of Ethics adopts, a title to which he has not a just claim be expelled from the Association, and have his name stricken from the roll of membership.

Considerable discussion followed, but finally, on motion of Dr. Maclay, the motion was adopted.

The Chair appointed the following-named gentlemen as essayists for the next meeting: Drs. Spencer, Sr., Faulkner, and Jackson.

On motion by the Secretary, a vote of thanks was extended to the essayists

for the able and masterly manner in which they had entertained the meeting.

There being no further business to come before the meeting, it adjourned to meet in San Jose on Wednesday, March 13, 1895.

At 9 A.M. on Thursday, December 13, 1894, the members assembled at Dr. J. W. O'Rourke's hospital, at 331 Golden Gate Avenue, San Francisco, to witness a clinical entertainment. The first case was the extirpation of an actinomycotic tumor from the sublingual region in a cow. The operation was skilfully performed by Drs. Spencer and Fox. The second operation was the removal of a melanotic tumor from the lumbar region of a horse by Dr. C. B. Orvis. The third operation on the programme was the removal of the ovaries from a bitch by Dr. F. E. Pierce. The fourth and last operation was the removal of the left arytenoid cartilage and the left vocal cords for the amelioration of a condition called "roaring" in a horse, by Dr. R. A. Archibald.

The entertainment was voted an entire success both as an instructive entertainment as well as an enjoyable one.

The members before adjournment, through the President, Dr. Orvis, at the suggestion of Dr. Fox, extended to Dr. O'Rourke a vote of thanks for the use of his hospital and for his kindness.

R. A. ARCHIBALD, V.S.,
Secretary.

NEWS ITEMS.

THE nineteenth annual meeting of the Pennsylvania State Board of Agriculture and General Farmers' Institute was held on January 23d and 24th at Harrisburg. On the last day it was addressed on "Should Dairy Cows be Inspected, and, if so, Should it be Done by State Authority?" by Geo. Abbott, Philadelphia, Pa.; "Tuberculosis at the State Hospital for the Insane, Norristown, Pa.," by Florence Hull Watson, pathologist of the asylum, Norristown, Pa.; "Tuberculosis," by Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, Washington, D. C.; "Tuberculosis," by Dr. Leonard Pearson, University of Pennsylvania, Philadelphia, Pa, and general discussion of the tuberculosis question.

Bulletin No. 4, of the Montana Agricultural Experiment Station, pertaining to glanders, by W. L. Williams, veterinarian, has just been received. It will bear reading by every veterinarian; and the light form the disease assumes in that high altitude will attract attention. It contains excellent advice to

the people of Montana, and all veterinarians will, after reading his quotations of many of those who have given an opinion as to its curability, appreciate his conclusions and advice as to the value of such an attempt.

Much criticism as to the great expense upon the State Treasury of Massachusetts in the work of eradicating tuberculosis is being indulged in by the public press, but we are full sure that if the object is well attained that there will be no more appreciative body of people in the land than those of that State.

The State of New Hampshire is now considering measures necessary to a more complete eradication of tuberculosis, and a large appropriation is asked for from the present Legislature. This legislation is being pressed for by the Board of Cattle Commissioners, which was created four years ago. When animals are killed one-half their appraised value on the basis of good health is allowed. This valuation is not in many instances considered sufficient. She charges much of her tuberculosis to Massachusetts when formerly it was the custom to graze many of the former's cattle on New Hampshire soil. Under the present law 900 herds have been examined, and over 600 head destroyed. Tuberculin has been depended upon the last four months for the detection of the disease.

The last number of the *Sugar Trade Journal* contained the following interesting item:

"Mr. Vivien, professor at the Sugar Academy at Douai, proposes, as one of the means to augment the consumption of sugar in accordance with the development of the production, the use of sugar for the alimentation of cattle, by giving 200 grammes (nearly one-half pound) of sugar per head of cattle, and if given during 200 days of the year to the 41,200,000 cows, horses, hogs, and sheep which exist in France, the French cattle united would eat the enormous quantity of 1,764,000,000 kilos of sugar, or twice our entire production. If the English cattle, numbering about 38,000,000 animals, consumed the 200 grammes of sugar per head for 200 days in the year, England would consume for this purpose 1,500,000 tons. The use of sugar in the alimentation of cattle, even in the country where sugar is cheapest, would offer a limited outlet."

Bulletin No. 44 has been received from the Department of Animal Industry, relating briefly the means of diagnosis, treat-

ment, etc., of swine disease and hog cholera. Considerable importance is placed upon the value of the following prescription as a curative measure when the disease has broken out:

	lbs.
℞.—Wood charcoal	1
Sulphur	1
Sodium chloride	2
Sodium bicarbonate	2
Sodium hyposulphite	2
Sodium sulphate	1
Antimony sulphide	1

Pulverize and mix thoroughly.

DOSE—A large tablespoonful for each 200 pounds of hogs to be treated. Given in the feed or, drenched, mixed with water when necessary. It is also recommended as a preventive remedy, especially when the disease prevails in a locality.

EQUINE FOODS.

THE earliest mention of oats in China was A. D. 618.

Oats were not known to the Hebrews or the Egyptians.

Millet is pre-historic in South Europe, Egypt, and Asia.

"Spurred rye" is one of the most deadly poisons known.

Maize has been found in the most ancient Peruvian tombs.

The straw of rye is often of far more value than the grain.

Maize has probably more enemies than any other species of grain.

Some valuable use has been found for every part of the maize plant.

It is said that mules fed on corn that has the smut will lose their hoofs.

Millet is sowed by the Chinese Emperor in a solemn ceremonial every year.

The Greeks had oats 200 B. C., but used them only as food for their horses.

Japan has developed a variety of maize with leaves striped with white.

ITEMS OF INTEREST.

CANADA seems peculiarly unfortunate of late. A cablegram from Antwerp, Belgium, announces that a cargo of sheep suffering from foot and mouth disease, has just been detained at that port of entry, and are likely to be returned to place of shipment in Canada.

There is a disposition to discard gray and white horses in the United States Army. A similar action, we believe, has also been adopted by the German Army.

The first biennial report of the State Veterinary Medical Board of California, covering the period from March, 1893, to November, 1894, has just been received. Some nine meetings of the board were held alternately at San Francisco and Los Angeles, examining in all fifty-one diplomas of graduates, all of which were found genuine, and licenses granted to register in their respective counties. Some fifty-one non-graduates presented themselves for examination, twenty-four of whom passed satisfactory examinations and twenty-seven were rejected. It will be remembered that this act only applies to cities and towns of two thousand or more inhabitants.

Harvard Veterinary Department has just done away with the subscription plan of treatment in its veterinary hospital, which will be grateful news to the entire profession. These means of obtaining hospital practice have always been distasteful to the local profession wherever they existed, and have caused many serious splits in the ranks. It is to be hoped that other schools may soon see their way to do likewise, and thus heal other breaches and regain the undivided support and assistance of the profession in the cities where schools exist.

Texas has just quarantined against the shipment of cattle from Mexico, owing to a widespread and serious outbreak of splenic fever now prevailing in that country.

No less than eight horses, two mules, and two hogs were Philadelphia's record in one day of electrocutions from broken telephone wires coming in contact with trolley and electric light wires.

Dr. Alex. Glass, lecturer on canine pathology at the Veterinary Department of the University of Pennsylvania, is busily engaged in translating the work of Prof. Mueller, of Germany, on canine pathology. This will be a very grateful addition to English-speaking and reading veterinarians.

The Philadelphia Board of Health, which governs the milk supply of Philadelphia, has just given its unqualified support and indorsement to the proposed act for the establishment of a Live Stock Sanitary Commission in Pennsylvania. Many letters from prominent farmers, dairymen, and stock raisers approving the act have already been received.

Newspaper warfare against sanitary measures in the shape of unsigned letters of attack, or by some sign covering up the writer's name, should have little weight in influencing legislation.

Mr. J. E. Gillingham, one of the veterinary school's benefactors in Pennsylvania, and one of the first stock raisers to rid his herd of tuberculosis, has written a strong letter urging the passage of the proposed live stock sanitary commission in this State.

In various centres of our country there is now being agitated the wisdom and necessity of making horse meat an article of commerce on our public stalls, and why not? He is in every sense cleaner than the hog or duck.

The North Dakota Veterinary Medical Association has strengthened its membership by the addition of seven new members at its recent meeting held in November.

The Philadelphia *Ledger* of January 1st contained a two-column report on the merits of horse flesh as a food apropos of the recent horse-flesh dinner given at Newark, N. J., by Dr. J. D. Hopkins. Many and varied were the opinions given by those interviewed, among whom might be mentioned Drs. Salmon, Harger, Gadsden, Weber, Glass, Zuill, Bridge, and E. Mayhew Michener. Mrs. S. T. Rorer, the famous cooking expert, refers to its lack of quality and toothsome character compared with beef. It looks now as if it may soon be a recognized and admitted article of merchandise on our stalls.

Very earnest work is now being done by the Army Legislative Committee of the U. S. V. M. A. toward that long-wished-for goal—official recognition of veterinarians in army service.

COLLEGE NOTES.

THE Veterinary Department of the Detroit College of Medicine has in contemplation the erection of a modern and commodious hospital. The course has not been lengthened, but the faculty has been strengthened by the addition of some two or three veterinarians. The second-year class numbers about twenty. The school suffered a serious loss in the death of Professor Reycraft last June.

The Indiana Veterinary College in its reorganization has greatly increased its corps of instructors. Several well-known veterinarians have been added to its teaching staff, which should greatly add to the efficiency of its work. The branches of theory and practice, anatomy, surgery, cattle pathology and contagious diseases, obstetrics and animal castration, canine pathology, meat and milk inspection, dentistry, hygiene, breeding and general management of domestic animals are all taught by veterinarians. A new college building is in course of erection.

The entrance requirements might be made higher, the curriculum increased, and a more fixed rule as to age for graduation, to the advantage of the profession. The college fees are very low.

The *Pacific Medical Journal* in its December issue bespeaks for the California Veterinary College a highly successful career. It has become affiliated with the California University. While most of the veterinary instructors are without experience in this line of work, still this is equally true of the teaching staff of every veterinary college at its inception in this country.

Prof. Leonard Pearson, of the Veterinary Department of the University of Pennsylvania, has been elected to the Chair of Veterinary Science at the State Agricultural College, Bellefonte, Pa.

As we go to press we learn of a change in the faculty of the California Veterinary College, the resignation of Dr. A. E. Buzard, professor of the principles and practice of equine medicine and dermatology, having been accepted, and the appointment of Dr. K. O. Steers, V.S., to the vacancy.

Veterinary Department of the Iowa Agricultural College matriculated twenty students for the class of '94 and '95. By an error of the printer in their catalogue the title of D.V.M. did not appear after the name of Dr. J. A. Replogle, one of the teaching staff, and this led us to fear that the number of veterinarians connected with the teaching staff had been decreased, an error we are very glad to correct.

CORRESPONDENCE.

FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE,
McGILL UNIVERSITY, MONTREAL, JANUARY, 1895.

Editor of Journal of Comparative Med. and Veter. Archives.

GENTLEMEN: I admire very much the candor and boldness with which the Committee of the United States Veterinary Medical Association on Intelligence and Education has set forth its views. It has uttered no uncertain sound, and the time has come for much plain speaking. It is not my intention to discuss the subject of veterinary education in general at present, but simply one aspect of it, with the committee's report on which I do not quite agree, if I understand the paragraph aright. It reads: "Moreover, the course of study should be graded. Text-books should, as a rule, be used as *reference* books [italics mine], except in such cases where it is possible to use the text-book in class, and supplement the same by lectures; but graded courses of didactic lectures, with frequent written and oral reviews, are, as a rule, best." With most of this, as with the greater part of the rest of the report, I am in accord; but the general impression is given that text-books must play a very subordinate part in the education of the student of veterinary medicine. An inquiry into the facts will reveal a state of neglect of the use of books—text-books and others—that, to my mind, is much to be regretted.

It has been seriously proposed that in the education of students of human medicine "didactic lectures" should be wholly superseded by recitations from text-books. This is extreme, and I do not agree with any such proposal; but if I had to choose between two things—recitations from good text-

books and an ordinary course of lectures, without the use of text-books at all—I would prefer the former. When a man leaves college, if he will advance, he must read as well as observe and think, and it is usually no small matter that he shall *learn* to read while at college. Speaking as a practical teacher of much experience, I know that so long as the lecturer attempts to cover the whole ground, however superficially, it is vain to expect the student to "consult" or "refer to" books. If the student can "pass" on the lectures he will not, in most instances, consult books.

I have been astounded at the very limited extent to which the students in most of the veterinary colleges of America use books at all, a fact which accounts in no small degree for the very illiterate condition of many graduates. Every man must read and ponder—gain knowledge through the eye from the printed page as well as through the ear by lectures. I hold that both, however, are necessary. Books cannot take the place of the living teacher, whose business it is to put in his own way the truths stated in text-books and other works, illustrate these by experiments and by reference to specimens, medical cases, etc., and then ascertain what is the mental condition of those before him by some sort of examination.

Where is a man to learn the use of books if not at college? I fancy the committee did not intend to discourage the use of good text-books; nevertheless, its utterance in the matter is open to the construction I have placed upon it; and if it will take the trouble to ascertain the proportion of students that regularly uses text-books, I am sure it will be amazed, and will agree with me that this state of things is one that calls for immediate remedy. I speak from a long experience of many different methods of teaching and learning.

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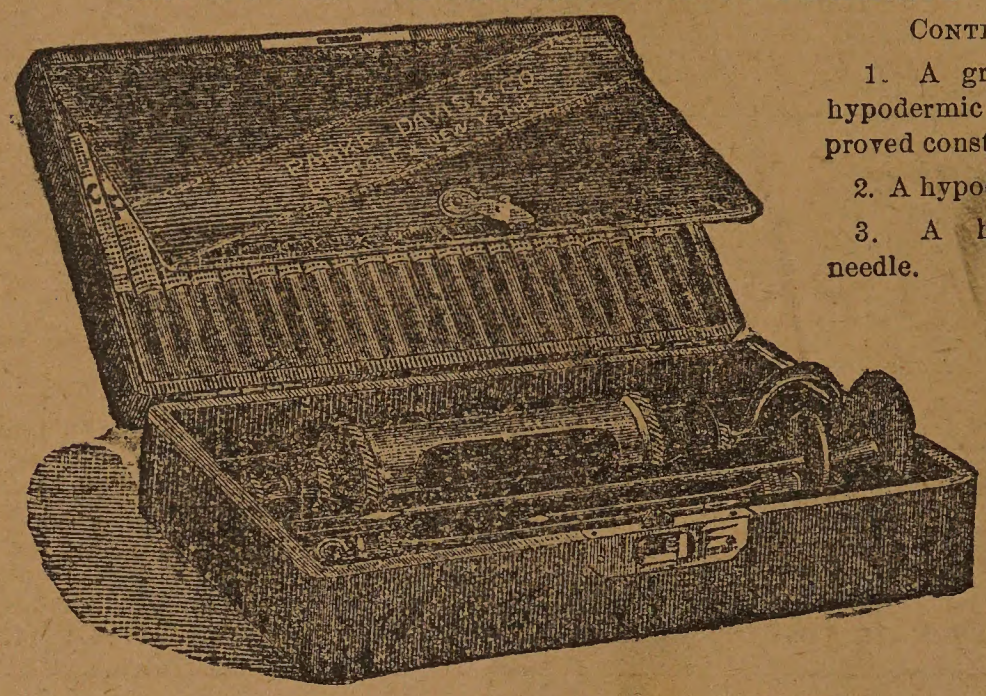

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